

# Curriculum Vitae



## Yong P. Chen

Karl Lark-Horovitz Professor of Physics and Astronomy and  
Professor of Electrical and Computer Engineering,  
Director of Purdue Quantum Science and Engineering Institute (PQSEI)  
Department of Physics and Astronomy, School of Electrical and  
Computer Engineering and Birck Nanotechnology Center, Purdue  
University, 525 Northwestern Ave, West Lafayette, IN 47907 USA

Villum Investigator and Professor, Dept. of Physics and Astronomy, Aarhus University,  
120 Ny Munkegade, 8000 Aarhus C, Denmark

Principal Investigator, WPI (World Premier International Research Center)-AIMR  
(Advanced Institute for Materials Research), Tohoku University, Sendai, Japan

MUST Chair Professor, Macau University of Science and Technology, Macau SAR

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**Web:** <http://www.physics.purdue.edu/people/faculty/yongchen.shtml>

[https://pure.au.dk/portal/en/persons/yong-chen\(dbfdb176-599c-4897-989f-91f1a240f495\).html](https://pure.au.dk/portal/en/persons/yong-chen(dbfdb176-599c-4897-989f-91f1a240f495).html)

[https://www.wpi-aimr.tohoku.ac.jp/en/research/researcher/chen\\_y.html](https://www.wpi-aimr.tohoku.ac.jp/en/research/researcher/chen_y.html)

**Research Group Web:** <http://www.physics.purdue.edu/quantum> (Chen Lab @ Purdue)

<https://phys.au.dk/forskning/forskningsomraader/faststof-og-materialefysik/yong-chen>

(Chen Lab @ AU, co-managed by R. Balog); [https://www.wpi-](https://www.wpi-aimr.tohoku.ac.jp/qms_lab/)

[aimr.tohoku.ac.jp/qms\\_lab/](https://www.wpi-aimr.tohoku.ac.jp/qms_lab/) (Chen Lab @ AIMR, co-managed by A.Kumatani/H.Oka)

**Personal:** Born Oct. 1979, Macau SAR/Chinese citizen, USA Permanent Resident,  
Danish and Portuguese resident

Languages:

Proficient – English and Chinese (Mandarin); Basic knowledge in German and Danish.

## Degree Education

- **Ph.D., Princeton University (1999–2005)**

*Major:* Electrical Engineering (Solid State Physics/Electronic Materials and Devices)

*Ph.D. Thesis:* Quantum Solids of Two Dimensional Electrons in Magnetic Fields

*Thesis Advisor:* Daniel C. Tsui (Nobel Laureate Physics'98)

- **M.Sc., MIT (1997–1999)**

*Major:* Mathematics (passed PhD qualifying exam) *Advisor:* Gian-Carlo Rota

*MS Thesis:* Model Order Reduction for Nonlinear Systems

*Thesis Advisor:* Jacob White

- **B.Sc., Xi'an Jiaotong University (1992–1996)**

*Major:* Applied Mathematics

*B.Sc. Thesis: Dynamics of General Equilibria: Application of Global Analysis and Differential Geometry in Mathematical Economics*  
*Thesis Advisor: Shou, Jilin*

## **Appointments**

Aarhus University, Villum Investigator/Professor of Materials Physics (dual appointment), 01/2021-

Purdue University, Karl Lark-Horovitz Professor of Physics and Astronomy, 08/2019-

Aarhus University, Department of Physics and Astronomy, Villum Investigator/Visiting Professor, 2019-2020

Purdue University, Director, Purdue Quantum Science and Engineering Institute, 02/2019-

Purdue University, Associate Director for Research, Birck Nanotechnology Center, 01/2018-07/2019

Purdue University, Professor of Physics and Astronomy and of Electrical and Computer Engineering, 08/2016-

Purdue University, Associate Professor of Physics and Astronomy and of Electrical and Computer Engineering, 08/2012-07/2016

Purdue University, Miller Family Assistant Professor of Physics and Nanoscience and Assistant Professor Courtesy of Electrical and Computer Engineering, 08/2007-07/2012

Rice University, J. Evans Attwell and Welch Postdoctoral Fellow, Richard Smalley Institute for Nanoscale Science and Technology and Department of Physics and Astronomy, 05/2005-08/2007

Princeton University, Department of Electrical Engineering, PhD Fellow and Graduate Research Assistant, 09/1999-04/2005

MIT, Department of Mathematics, PhD Fellow and Graduate Teaching Assistant, 09/1997-07/1999

Other concurrent appointments and affiliations:

WPI (World Premier International Research Center)-AIMR (Advanced Institute for Materials Research), Tohoku University, Principal Investigator, 04/2017-

Visiting/Consulting Professor and MUST Chair Professor, Macau University of Science and Technology, 2020-2024

CEO and Co-founder (with S. Kais and D. Stewart), Quanta LLC, 2020-2023

AVS-Quantum Science (American Institute for Physics), Associate Editor in Quantum Materials and Devices, 2019-2023

**Awards and Honors** (selected, since 1996)

Herbert Newby McCoy Award, Purdue University, 2021

Karl Lark-Horovitz Professorship, Purdue University, 2019

Villum Investigator, Villum Foundation, 2019

Fellow of American Physical Society, 2016

Masao Horiba Award, Honorable Mention on Nanoparticle Research, 2015

Purdue University Faculty Scholar, 2013

Purdue University, Excellence in Research Award, 2011 & 2012 & 2017

IBM Faculty Award, 2009

NSF CAREER Award, 2009-2014

DOD Defense Threat Reduction Agency (DTRA) Young Investigator Award, 2009-2011

American Chemical Society PRF Doctoral New Investigator Award, 2008-2010

Adjunct Professor (honorary title), Xi'an Jiaotong University, 2007-2010

Miller Family Professorship, Purdue University, 2007-2012

J. Evans Attwell-Welch Postdoctoral Fellowship in Nanoscience, Rice University, 2005-2007

National Nanotechnology Initiative (NNI) Scholarship for Early Career Scientists, 2005

International Union of Pure and Applied Physics (IUPAP) Young Author Best Paper Award in Semiconductor Physics, 2004

Sir Y.S. Gordon Wu Fellowship in Engineering and Applied Science, Princeton University, 1999-2003

M.I.T Applied Mathematics Fellowship, 1998

Y.T. Li Fellowship, M.I.T, 1997

Benefactor's Scholarship, St. John's College, Cambridge University, 1997 (declined)

Highest Scholarship and "Model of Outstanding Students" (5 out of 12,000), Xi'an Jiaotong University, 1996

### **Professional and Scholarly Associations**

American Association for the Advancement of Sciences (AAAS)

American Physical Society (APS)

IEEE

### **Research Areas**

#### **Experimental condensed matter and nanophysics:**

low dimensional nanostructures; graphene & 2D materials; topological materials & states

#### **Experimental atomic, molecular, optical and quantum physics:**

cold atoms/molecules and Bose-Einstein condensation;

### **Research Grants**

50 grants (35 as PI) received since 2008, total funding >~\$40M (out of which >~\$20M to Chen);

Average annual research expenditure of group: >~1M;

Total capital equipment in group: ~\$5M

#### *Current active grants:*

50) *Supporting Partnering for Advanced Research teamwork (SPARK) Program:*

*Quantum Science Center renewal, Purdue University Office of Research, 01/2024-12/2024, **PI: Yong Chen**, \$100,000*

49) *Excitonic Rydberg Quantum Material, a project funded by Center for Quantum Technologies, an Industry-University Cooperative Research Center (IUCRC)*

*headquartered at Purdue University funded by NSF (grant 2224960), 09/2023-08/2024 (project PI: Hadiseh Alaeian, co-PI: Yong Chen, \$60,000)*

48) *ExpandQISE: Track 2: Developing Research and Education Programs in Quantum Information Science and Engineering with Research on Locally Tunable 2D Topological Superconductors, subcontract from University of Wyoming (lead institution) via National Science Foundation (NSF), 09/2022-08/2027 (project PI: Jifa Tian at U-Wyoming with several co-PIs from Wyoming and Purdue, project total: \$5M with Purdue subcontract ~\$1.5M)*

47) *Quantum Science Center (QSC), a DOE Quantum Information Science (QIS) Research Center, subcontract from Oak Ridge National Lab (ORNL, lead institution) via DOE Office of Science, 10/2020-09/2025 (**Purdue PI: Yong Chen** with 12 other co-PIs;*

the whole QSC PI is David Dean from ORNL with numerous other co-PIs), \$11M (Purdue subcontract, total QSC center is \$115M) over five years.

46) *MURI: Novel Light-Matter Interactions In Topologically Non-Trivial Weyl Semimetal Structures And Systems*, subcontract from University of Southern California (USC, lead institution) via Air Force Office of Scientific Research (AFOSR)-DOD MURI program, 09/2020-08/2025 (Purdue PI: Alexandra Boltasseva, Purdue co-PI: Yong Chen; whole MURI project PI: Mercedeh Khajavikhan/USC with other co-PIs: Demetrios Christodoulides and Madhab Neupane/Univ. Central Florida, Arun Bansil/Northeastern; David Mandrus/Univ. Tennessee), \$2,480,000 (Purdue subcontract, total MURI project: \$7,500,000)

45) Villum Investigator, Villum Foundation. 07/01/2019-06/30/2025 (**PI: Yong Chen**), ~\$6,200,000, supporting establishing and leading a *Villum Center for Hybrid Quantum Materials and Devices* hosted at Aarhus University, Denmark

44) *Quantum Computing Algorithms and Applications for Coherent and Strongly Correlated Chemical Systems*, Department of Energy (DOE) Basic Energy Sciences, 09/2018-08/2024 (PI: Sabre Kais, Co-PIs: Yong Chen, Libai Huang/Purdue; David Mazziotti, John Anderson /U-Chicago), \$4,900,000

43) *Quantum Many-Body Physics in Spin-Orbit Coupled Bose Gases*, National Science Foundation (NSF) PHY# 2012185, 09/01/2020-08/31/2024 (**PI: Yong Chen**), \$360,000

42) *Applications of Quantum Materials in Nuclear Physics Experiments*, Department of Energy (DOE) Office of Nuclear Physics, Nuclear Physics Quantum Horizon Program, 11/2020-10/2023 (**PI: Yong Chen**), \$200,000

41) *Topological Insulator Based Coherence Battery*, Lockheed Martin Co. 11/01/2018-10/31/2023 (**PI: Yong Chen**), \$360,000

40) *Principal Investigator at WPI-AIMR International Center for Materials Research --- International Joint Research Lab and Program "Quantum Materials and Spintronics"*: staff/postdoc/visitors and collaborative research with World Premier International Research Center Initiative (WPI) Advanced Institute for Materials Research (AIMR), Tohoku University and JSPS, Japan. 10/01/2017-, (**PI: Yong Chen**, with multiple local co-PIs: Aki Kumatani et al.), valued at ~200,000/yr, main activity location & funds managed by: AIMR, Tohoku University; [note a new addition project starting in 2020 "quantum sensing: from materials to universe" (~80K/yr for 4.5 yrs, exploring quantum dots and sensing for materials research and high energy physics) funded by Tohoku "FriDUO (creation of new fields of research" program) (PI: Yong Chen, co-PIs: K.Inoue and T.Otsuka/Tohoku, Rafael Lang and P.Upadhyaya/Purdue as overseas partner)]

*Past grants:*

39) *Investigation of strain effect on graphene/ferroelectric PMN-PT hybrid systems*, FDCT Foundation-Macau hosted at Macau Univ. Science and Technology (MUST), 07/2021-06/2023 (**PI: Yong Chen**), ~\$100,000 with additional ~12,000 MUST internal seed support on AI and materials analysis

38) *NSF IUCRC Planning Grant*, Purdue University: Center for Quantum Technologies (CQT), 05/2021-04/2022 (PI: Sabre Kais, Co-PIs: David Stewart, Vlad Shalaev, **Yong Chen**, Andy Weiner), \$20,000 [the planning grant has since resulted in an NSF IUCRC Center grant awarded to Purdue-IU-Notre Dame consortium with Kais as PI]

37) *A milli-kelvin optical and microwave system for next generation quantum hybrids*, DOD-ONR DURIP, 05/2021-04/2022 (PI: Pramey Upadhyaya, Co-PIs: Vlad Shalaev, **Yong Chen**), \$228,000

36) *Quantum Light Emitting Defects*, Los Alamos National Laboratory, 11/2020-10/2021 (**PI: Yong Chen**), \$75,000

35) *EAGER: Enabling Quantum Leap: Electrically tunable, long-distance coherent coupling between room temperature qubits mediated by magnons in low-dimensional magnets*, National Science Foundation (NSF) DMR# 1838513, 07/2018-06/2021 (PI: Pramey Upadhyaya, Co-PIs: **Yong Chen**, Vlad Shalaev), \$300,000

34) *Dynamics and Excitations of Spin-Orbit-Coupled Bose-Einstein Condensates*, National Science Foundation (NSF) PHY# 1708134, 09/01/2017-08/31/2021 (**PI: Yong Chen**), \$300,000

33) *Collaborative Research: Strain Based Devices for Switches and Memory Applications*, National Science Foundation (NSF) ECCS#1711332, 07/01/2017-06/30/2021 (**PI: Yong Chen**), \$210,000 [Prof. Vidya Madhavan of UIUC is the lead-PI and Collaboration Partner is funded under a separate collaborative grant]

32) *EFRI NewLaw: Controlling Thermal Transport with Topologically Guided Heat Carriers*, National Science Foundation (NSF) EFMA #1641101, 09/01/2016-08/31/2021 (**PI: Yong Chen**, Co-PIs: Zubin Jacob, Xianfan Xu, Qian Niu/UT-Austin), \$1,964K

31) *Machine Learning for Data Analytics and Optimization*, Purdue University Discovery Park Data Sciences Initiative, 05/01/2018-04/30/2020 (PI: Sabre Kais, co-PIs: **Yong Chen**, Ashraf Alam, Alex Pothén), \$300,000

30) *Photonics Science and Technologies for Bio Security, Food Safety and other Health Applications*, Discovery Park Big Idea Challenge Program, Purdue University, 04/01/2017-03/31/2019, (**PI: Yong Chen**, Co-PIs: Mike Ladisch, Vlad Shalaev, Sasha Boltasseva, Young Kim, David Nolte), \$300,000

29) *Quantum Electronic Metrology in Graphene Nanostructures*, National Institute of Standards and Technology (NIST), 01/01/2010-8/31/2019 (**PI: Yong Chen**), \$500K

- 28) *Acquisition of an Optical MicroCryoStat with Magnet*, Provost's Major Scientific Equipment Program, Purdue University, 08/01/2017-07/31/2018 (PI: **Yong Chen**), \$72,189
- 27) *Acquisition of a tunable-wavelength CW Ti:S laser*, EVPRP Laboratory and University Core Facility Research Equipment Grants Program, 04/01/2018-05/31/2018, (PI: **Yong Chen**, Co-PIs: Mike Ladisch, Vlad Shalaev, Sasha Boltasseva, Gary Cheng, Tongcang Li, Yulia Pushkar), \$300,000
- 26) *Acquisition of a Cryogen-free High Field Magnet for Magneto-transport and Magneto-optical Experiments*, EVPRP Laboratory & University Core Facility Research Equipment Program, Purdue University, 04/01/2017-03/31/2018 (PI: **Yong Chen**), \$98,350
- 25) *Large Scale Nanomanufacturing of Novel Inhomogeneous Strained Two-Dimensional Materials with Tunable Electronic and Optical Properties*, National Science Foundation (NSF) CMMI #1538360, 09/01/2015-08/31/2018 (PI: Gary Cheng, Co-PI: **Yong P. Chen**), \$300K
- 24) *Majorana particles in topological insulator quantum wires*, National Science Foundation (NSF) DMR #1410942, 09/01/2014-08/31/2017 (PI: **Yong Chen**, Co-PI: Leonid Rokhinson), \$420K
- 24) *Optically synthesizing novel atomic and molecular quantum matter --- an emerging research in atomic, molecular and optical (AMO) physics*, Purdue University OVPR (Office of Vice President for Research) Research Incentive Grant, 09/2013-03/2016 (PI: **Yong Chen**, Co-PIs: Chris Greene, Dan Elliott, Yuli Lyanda-Geller), \$300K
- 25) *Acquisition of Wide Wavelength Range, Nanosecond Optical Parametric Oscillator System for Condensed Matter and Biophysics Applications*, Purdue University OVPR (Office of Vice President for Research) University Core Facility Research Equipment Program, 01/2015-05/2015 (PI: Oana Malis, Co-PIs: **Yong Chen**, Yulia Pushkar, Sergei Savikhin), \$100K
- 22) *MESO: Topological Insulator based Coherent Energy Devices*, DARPA, 07/01/2011-06/30/2015 (PI: **Yong Chen**, Co-PIs: Supriyo Datta, Mark Lundstrom, Peide Ye, Xianfan Xu, Anant Ramdas, Zahid Hasan/Princeton, Li Shi/UT-Austin, Marcel Franz/Univ. British Columbia, Rama Venkatasubramanian/RTI International), \$6.2M
- 21) *Thermal Interface Materials Based on Graphene Networks*, National Science Foundation (NSF) Cooling Technology Research Center (CTRC) at Purdue University, 01/01/2014-12/31/2015 (PI: **Yong Chen**, Co-PI: Xiulin Ruan), \$80K
- 19) *Hybrid superconductor/topological insulator devices with quasi-1D Bi<sub>2</sub>Te<sub>3</sub> nanowires*, Purdue Center for Topological Materials (PCTM) Seed Grant, 09/2012-08/2014 (PI: **Yong Chen**, Co-PIs: Leonid Rokhinson, Yue Wu, Gerhard Klimeck), \$36K

- 18) *Graphene optical modulators for high energy physics*, Argonne National Lab, 01/2013-12/2014 (PI: **Yong Chen**), \$23K
- 17) *CAREER: Table-top high energy physics in graphene*, NSF CAREER Award, National Science Foundation (NSF) DMR #0847638, 09/01/2009-08/31/2014 (PI: **Yong Chen**), \$550K
- 16) *Topological Insulator based Field Effect Transistors*, Intel, 01/01/2011-12/31/2013 (PI: **Yong Chen**, Co-PIs: Yue Wu, Gerhard Klimeck), \$450K
- 15) *MRI: Acquisition of Self-Referenced Frequency Comb for Atomic-Molecular-Optical Physics and Optical Signal Processing Research*, NSF #1126314, 09/2011-08/2012 (PI: Andy Weiner, Co-PIs: **Yong Chen**, Dan Elliott), \$270K
- 14) *Compliant Thermal Interface Materials Using Graphene*, Cooling Technology Research Center (CTRC), Purdue University, 01/01/2012-12/31/2013 (PI: Xiulin Ruan, Co-PIs: **Yong Chen**, John Blendell, Jeff Youngblood), \$80K
- 13) *Spin Transport and Spin Logic in Topological Insulator Nanowires*, Nanoelectronics Research Initiative (NRI)-Midwest Institute for Nanoelectronics Discovery (MIND) Seed Grant from Indiana Economic Development Corporation (IEDM), 08/01/2010-07/31/2011 (PI: **Yong Chen**, Co-PIs: Yue Wu, Gerhard Klimeck, Supriyo Datta), \$60K
- 12) *Graphene-based materials for solar energy applications*, Day & Associate LLC, 09/01/2010-08/31/2011 (PI: **Yong Chen**), \$15K
- 11) *Instrumentation for Parallel and Localized Coherent Optical Control of Ultracold Polar Molecules*, Defense University Research Instrumentation Program (DURIP) Award, Army Research Office (ARO), 08/01/2010-07/31/2011 (PI: **Yong Chen**, Co-PI: Daniel S. Elliott), \$160K
- 10) *Graphene-based thermal interface materials*, Cooling Technology Research Center (CTRC), Purdue University, 01/01/2010-12/31/2011 (PI: Xiulin Ruan, Co-PIs: **Yong Chen**, Tim Fisher), \$80K
- 9) *IBM Faculty Award*, IBM, 10/01/2009-09/30/2010 (PI: **Yong Chen**), \$30K
- 8) *Interaction of radiation with graphene based nanomaterials*, Young Investigator Award, Defense Threat Reduction Agency (DTRA) #HDTRA1-09-1-0047, 08/01/2009-07/31/2013 (PI: **Yong Chen**), \$400K
- 7) *ARI-MA: Graphene-based sensors for detecting special nuclear materials*, National Science Foundation (NSF) ECCS # 0833689, 09/01/2008-08/31/2009 and Department of Homeland Security (DHS) #2009-DN-077-ARI036-02, 09/01/2009-08/31/2013 (PI: **Yong Chen**, Co-PI: Igor Jovanovic/Penn State University), \$2M



6) *Nanoelectronics Research at Birck Nanotechnology Center*, Matching Fund from Indiana Economic Development Corporation (IEDM) to support Nanoelectronics Research Initiative (NRI)-Midwest Institute for Nanoelectronics Discovery (MIND), 09/01/2008-08/31/2010 (PI: Alan Rebar, Co-PIs: Gerhard Klimeck, Joerg Appenzeller, Peide Ye, Yong Chen), \$300K

5) *Thermal transport and thermal logic gates in graphene nanostructures*, project funded by Nanoelectronics Research Initiative (NRI) via Midwest Institute for Nanoelectronics Discovery (MIND, NERC contract #2008-NE-1806, Center PI: Alan Seabaugh), 09/01/2008-08/31/2011 (Project **PI: Yong Chen**, Co-PI: Zhigang Jiang/Geogia Tech), \$250K

4) *Quantum control of polar molecules for quantum information and quantum computing*, National Science Foundation (NSF) CCF #0829918, 09/01/2008-08/31/2011 (**PI: Yong Chen**, Co-PI: Daniel S. Elliott), \$320K

3) *Quantum gases with tunable interaction and disorder in optical lattices*, Defense University Research Instrumentation Program (DURIP) Award, Army Research Office (ARO) #W911NF-08-1-0265, 08/01/2008-07/31/2010 (**PI: Yong Chen**), \$150K

2) *Experimental studies of graphene: material properties and hydrogen adsorption*, Doctoral New Investigator Award, American Chemical Society PRF#48010-G10, 05/01/2008-04/30/2010 (**PI: Yong Chen**), \$50K

1) *NEMS fluid sensors based on suspended nanotubes and nanowires*, National Science Foundation (NSF) ECCS#0702766, 05/01/2007-04/30/2010 (PI: Jun Lou/Rice University, Co-PI: Yong Chen), \$300K

## **Publications**

(all publications & preprints at: <http://www.physics.purdue.edu/quantum/publications>)

Published or accepted journal papers include, for example:

9 Nature Physics/Materials/Electronics/Nanotechnology [including 2 invited reviews];  
7 Nature Communications;  
2 Science Advances;  
18 Physical Review Letters;  
22 Nano Letters; 3 ACS Nano  
4 Advanced Materials;  
27 Applied Physics Letters etc.

Total citations: >12,000 (ISI Web of Science); >18,000 (Google Scholar)  
H-index= 56 (Web of Science); 65 (Google scholar) as of 1/2024 [increase from H=6 in 2007 at a rate of >~3/year]

ISI/Web of Science Citation Profile (Researcher ID: K-7017-2012) [linked to ORCID: [orcid.org/0000-0002-7356-4179](https://orcid.org/0000-0002-7356-4179)]

<b>Publications</b> 217 Total From 1900 to 2024	<b>Citing Articles</b> 10,467 Analyze Total 10,323 Analyze Without self-citations	<b>Times Cited</b> 12,577 Total 12,215 Without self-citations	56 H-Index Average per item: 57.96
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Google Scholar Citation Profile:

<http://scholar.google.com/citations?user=9EBAemEAAAAJ>

Cited by	VIEW ALL	
	All	Since 2019
Citations	18839	7470
h-index	65	45
i10-index	171	128

Representative Research Achievements include [References listed on p.16-35]:

### Two-dimensional magnets

- **Stacked/twisted (antiferro)magnets** --- realization of Moire magnetism in twisted layered antiferromagnets (twisted double bilayer CrI<sub>3</sub>) [J180]; observation of exchange-bias like emergent interfacial ferromagnetism in stacked hetero-antiferromagnets (CrI<sub>3</sub>/CrCl<sub>3</sub>) [J175]

### Topological insulators (TI) and related ---

- **Topological Josephson Junctions** --- Demonstration of topological transport in Superconductor(S)-Topological Insulator (TI)-S Josephson junctions [J156, J149];
- **Topological spintronics** --- discovered “**topological spin battery effect**”, suggesting current-induced nuclear *and* electronic spin polarizations with *exceptional long lifetime* in TIs (a rare experimental demonstration of “topological protection” in transport) [J131]; among the first to demonstrate characteristic **spin-helical current** (*current induced electron spin polarization*) in TI due to topological surface states [J104, J151], distinguished from contributions from other bulk-related states [J162];
- **Topological phase transition**: demonstrated thickness and magnetic field tuned TI-insulator-semimetal transitions (Dirac gap opening/closing) in TI thin films with tunable inter-surface hybridization [J153]
- **Half-integer Aharonov-Bohm effect**: demonstrated in 3D TI nanoribbons the half-integer Aharonov-Bohm effect, a unique transport fingerprint of 3D TIs [J112]
- **Bulk-insulating topological insulators (TI) exhibiting topological transport and half-integer quantum Hall effect** --- demonstrated record-quality “true” 3D TIs free

from bulk conduction, realizing the sought-after half-integer quantum Hall effect due to topological surface state (TSS) Dirac fermions, a key topological transport fingerprint unique to 3D TIs [J93, cited>300 times] [J115];

#### **Graphene and related materials ---**

- **CVD graphene** --- pioneering studies of synthesizing high-quality graphene using chemical vapor deposition (CVD) and material/electronic properties of such CVD graphene [J17, cited>1500 times][J23, cited>100 times][J24, cited >200 times] (see also discussion of our work in: "Search and Discovery", Phys. Today 63 (8), 15, (2010); "News and Views", Nature Nano. 4, 212, (2009); news.bbc.co.uk/2/hi/science/nature/7827148.stm; Nobel physics lecture'2010 etc.]
- **Graphene single crystals and grain boundaries** --- pioneering studies of (CVD) graphene single crystals and grain boundaries, including the first measurement of electronic transport across a single grain boundary in graphene [J35, cited>1400 times] and first STM image of atomic structure and electronic scattering at such single crystal *graphene edges* [J42, cited 100 times];
- **Graphene-based optoelectronics and plasmonics**: demonstrated "graphene phototransistors" (optically-actuated graphene field effect transistors) for potential applications in radiation/photo detection [J132]; application of CVD graphene for tunable plasmonics [J61, cited>200 times] [J78, cited>100 times] [J127].
- **Twisted bilayer graphene**: CVD synthesis of twisted bilayer graphene (tBLG) and observation of novel low-energy Raman modes [J72, cited>100 times]; elucidation of electron-phonon coupling in tBLG by gate-tunable Raman [J96] and transport measurements [J143];
- **Irradiated graphene**: creation of artificially-disordered graphene (through irradiation) and studies of rad-hardness of graphene devices [J32, cited>100 times] [J34, cited >100 times].
- **Graphene thermotronics**: pioneering computational study and design of thermal transport and control in graphene nanoribbons (revealing, e.g., chirality and direction dependent thermal transport) [J21, cited >800 times] [J31, cite >100 times]

#### **Quantum Hall physics and 2D electrons ---**

- **"bulk quantum Hall effect"** --- demonstrated a novel "(3D) bulk quantum Hall effect" due to many parallel 2D electrons in a layered conductor (heavily doped Bi<sub>2</sub>Se<sub>3</sub>) [J54, cited > 100 times]
- **New solid phases of 2D electrons**: discovered new types of solid phases (Wigner crystals) of 2D electrons formed by quasiparticles around integer quantum Hall states [J3, cited >100 times] and by fractionally-charged particles around 1/3 fractional quantum Hall state [J29], and two other different solid phases in higher magnetic fields [J7], all measured with microwave spectroscopy;
- **Quantum nature and melting of Wigner crystals**: demonstrated the melting of the magnetic-field Wigner crystal phase in the quantum Hall system is controlled by quantum correlation (wavefunction overlap) between 2D electrons [J11];

#### **Cold atom physics and quantum chemistry ---**

- “**Atomtronic Spintronics**”: one of the few labs to realize a **spin-orbit-coupled (SOC) Bose-Einstein condensate (BEC)**, demonstrated *spin-dependent quantum transport* and **matter-wave beam splitter** in momentum space, realizing tunable and spin-resolved Landau-Zener tunneling [J89, cited >100 times] and Landau-Zener-Stueckelberg interferometry [J130]; realized a “quantum gas collider” between spinor BECs by performing a quantum quench in a SOC BEC, enabling a “quantum simulator” to study spin transport in interacting SOC systems [J148].
- Demonstration of a synthetic Hall cylinder (in curved space) and symmetry protected topological band crossing, measured via quantum transport (mimicking Mobius strip in momentum space) [J169]
- Realized a disorder-induced superfluid-insulator transition in a Bose-Einstein condensate (BEC) and tracked the evolution of phase coherence cross the transition [J13, cited >100 times]
- **Quantum chemistry interferometer**: demonstrated (in photoassociation of cold atoms) a new approach for quantum control of chemical reactions by preparing reactants in quantum superposition states, with interference between multiple reaction pathways [J145]
- Among the first laser spectroscopy of LiRb molecules [J40] and synthesized **first LiRb cold molecules** using photoassociation (and demonstrating highest, near-unity photoassociation rates in bi-alkali molecules) [J81, J76]

The following 49 papers by Chen are each cited >100 times (Google Scholar, as of 12/2023)

TITLE	CITED BY	YEAR
<p><a href="#">Graphene segregated on Ni surfaces and transferred to insulators</a>            Q Yu, J Lian, S Siriponglert, H Li, YP Chen, SS Pei            Applied Physics Letters 93 (11), 113103</p>	1775	2008
<p><a href="#">Control and characterization of individual grains and grain boundaries in graphene grown by chemical vapour deposition</a>            Q Yu, LA Jauregui, W Wu, R Colby, J Tian, Z Su, H Cao, Z Liu, D Pandey, ...            Nature materials 10 (6), 443-449</p>	1696	2011
<p><a href="#">Thermal conductivity and thermal rectification in graphene nanoribbons: a molecular dynamics study</a>            J Hu, X Ruan, YP Chen            Nano Letters 9 (7), 2730-2735</p>	914	2009
<p><a href="#">Raman spectroscopy of graphene and related materials</a>            I Childres, LA Jauregui, W Park, H Cao, YP Chen            New developments in photon and materials research 1, 1-20</p>	658	2013
<p><a href="#">Polycrystalline graphene and other two-dimensional materials</a>            OV Yazyev, YP Chen            Nature nanotechnology 9 (10), 755-767</p>	510	2014
<p><a href="#">Observation of topological surface state quantum Hall effect in an intrinsic three-dimensional topological insulator</a>            Y Xu, I Miotkowski, C Liu, J Tian, H Nam, N Alidoust, J Hu, CK Shi, ...            Nature Physics 10 (12), 956-963</p>	460	2014
<p><a href="#">Electrically tunable damping of plasmonic resonances with graphene</a>            NK Emani, TF Chung, X Ni, AV Kildishev, YP Chen, A Boltasseva            Nano letters 12 (10), 5202-5206</p>	364	2012
<p><a href="#">Extreme Tunability of Interactions in a Li 7 Bose-Einstein Condensate</a>            SE Pollack, D Dries, M Junker, YP Chen, TA Corcovilos, RG Hulet            Physical review letters 102 (9), 090402</p>	345	2009

<b>Rational synthesis of ultrathin n-type Bi<sub>2</sub>Te<sub>3</sub> nanowires with enhanced thermoelectric properties</b> G Zhang, B Kirk, LA Jauregui, H Yang, X Xu, YP Chen, Y Wu Nano letters 12 (1), 56-60	328	2011
<b>Wafer-scale synthesis of graphene by chemical vapor deposition and its application in hydrogen sensing</b> W Wu, Z Liu, LA Jauregui, Q Yu, R Pillai, H Cao, J Bao, YP Chen, SS Pei Sensors and Actuators B: Chemical 150 (1), 296-300	303	2010
<b>Effect of oxygen plasma etching on graphene studied using Raman spectroscopy and electronic transport measurements</b> I Childres, LA Jauregui, J Tian, YP Chen New Journal of Physics 13 (2), 025008	259	2011
<b>Electronic transport in chemical vapor deposited graphene synthesized on Cu: Quantum Hall effect and weak localization</b> H Cao, Q Yu, LA Jauregui, J Tian, W Wu, Z Liu, R Jalilian, DK Benjamin, ... Applied Physics Letters 96 (12), 122106-122106-3	259	2010
<b>Atomic force microscope local oxidation nanolithography of graphene</b> L Weng, L Zhang, YP Chen, LP Rokhinson Applied Physics Letters 93 (9), 093107	254	2008
<b>Ultrafast surface carrier dynamics in the topological insulator Bi<sub>2</sub>Te<sub>3</sub></b> M Hajlaoui, E Papalazarou, J Mauchain, G Lantz, N Moisan, D Boschetto, ... Nano letters 12 (7), 3532-3536	249	2012
<b>Nontoxic and Abundant Copper Zinc Tin Sulfide Nanocrystals for Potential High-Temperature Thermoelectric Energy Harvesting</b> H Yang, LA Jauregui, G Zhang, YP Chen, Y Wu Nano letters 12 (2), 540-545	247	2012
<b>Electrical modulation of fano resonance in plasmonic nanostructures using graphene</b> NK Emani, TF Chung, AV Kildishev, VM Shalaev, YP Chen, A Boltasseva Nano letters 14 (1), 78-82	235	2014
<b>Phonon Lateral Confinement Enables Thermal Rectification in Asymmetric Single-Material Nanostructures</b> Y Wang, A Vallabhaneni, J Hu, B Qiu, YP Chen, X Ruan Nano letters 14 (2), 592-596	227	2014
<b>Effect of electron-beam irradiation on graphene field effect devices</b> I Childres, LA Jauregui, M Foxe, J Tian, R Jalilian, I Jovanovic, YP Chen Applied Physics Letters 97 (17), 173109	214	2010
<b>Use of graphene as protection film in biological environments</b> W Zhang, S Lee, KL McNear, TF Chung, S Lee, K Lee, SA Crist, TL Ratliff, ... Scientific reports 4, 4097	211	2014
<b>Quantized Hall Effect and Shubnikov–de Haas Oscillations in Highly Doped Bi<sub>2</sub>Se<sub>3</sub>: Evidence for Layered Transport of Bulk Carriers</b> H Cao, J Tian, I Miotkowski, T Shen, J Hu, S Qiao, YP Chen Physical review letters 108 (21), 216803	210	2012
<b>Growth of single crystal graphene arrays by locally controlling nucleation on polycrystalline Cu using chemical vapor deposition</b> W Wu, LA Jauregui, Z Su, Z Liu, J Bao, YP Chen, Q Yu Advanced Materials 23 (42), 4898-4903	210	2011
<b>Tuning the thermal conductivity of graphene nanoribbons by edge passivation and isotope engineering: A molecular dynamics study</b> J Hu, S Schiffl, A Vallabhaneni, X Ruan, YP Chen Applied Physics Letters 97 (13), 133107	189	2010
<b>Tunable Landau-Zener transitions in a spin-orbit coupled Bose-Einstein condensate</b> AJ Olson, SJ Wang, RJ Niffenegger, CH Li, CH Greene, YP Chen Physical Review A 90, 013616	180	2014

<a href="#">Atomic-scale investigation of graphene grown on cu foil and the effects of thermal annealing</a>	180	2011
J Cho, L Gao, J Tian, H Cao, W Wu, Q Yu, EN Yitamben, B Fisher, ... ACS nano 5 (5), 3607-3613		
<a href="#">PhotocARRIER generation from interlayer charge-transfer transitions in WS2-graphene heterostructures</a>	178	2018
L Yuan, TF Chung, A Kuc, Y Wan, Y Xu, YP Chen, T Heine, L Huang Science advances 4 (2), e1700324		
<a href="#">Thermal transport in graphene nanostructures: Experiments and simulations</a>	174	2010
LA Jauregui, Y Yue, AN Sidorov, J Hu, Q Yu, G Lopez, R Jalilian, ... Ecs Transactions 28 (5), 73		
<a href="#">Observation of Low Energy Raman Modes in Twisted Bilayer Graphene</a>	171	2013
R He, TF Chung, C Delaney, C Keiser, LA Jauregui, PM Shand, ... Nano letters 13 (8), 3594-3601		
<a href="#">Phase coherence and superfluid-insulator transition in a disordered Bose-Einstein condensate</a>	157	2008
YP Chen, J Hitchcock, D Dries, M Junker, C Welford, RG Hulet Physical Review A 77 (3), 033632		
<a href="#">Thermal expansion coefficients of Bi<sub>2</sub>Se<sub>3</sub> and Sb<sub>2</sub>Te<sub>3</sub> crystals from 10 K to 270 K</a>	145	2011
X Chen, HD Zhou, A Kiswandhi, I Miotkowski, YP Chen, PA Sharma, ... Applied Physics Letters 99 (26), 261912		
<a href="#">Electronic properties of grains and grain boundaries in graphene grown by chemical vapor deposition</a>	144	2011
LA Jauregui, H Cao, W Wu, Q Yu, YP Chen Solid State Communications 151 (16), 1100-1104		
<a href="#">Strong anomalous optical dispersion of graphene: complex refractive index measured by Picometry</a>	144	2008
X Wang, YP Chen, DD Nolte OPTICS EXPRESS 16 (26), 22105		
<a href="#">Ultrafast carrier and phonon dynamics in Bi<sub>2</sub>Se<sub>3</sub> crystals</a>	141	2010
J Qi, X Chen, W Yu, P Cadden-Zimansky, D Smirnov, NH Tolk, ... Applied Physics Letters 97 (18), 182102		
<a href="#">Design Principle of Telluride-Based Nanowire Heterostructures for Potential Thermoelectric Applications</a>	140	2012
G Zhang, H Fang, H Yang, LA Jauregui, YP Chen, Y Wu Nano letters 12 (7), 3627-3633		
<a href="#">Model order reduction for nonlinear systems</a>	139	1999
Y Chen Massachusetts Institute of Technology		
<a href="#">Electrical injection and detection of spin-polarized currents in topological insulator Bi<sub>2</sub>Te<sub>2</sub>Se</a>	133	2015
J Tian, I Miotkowski, S Hong, YP Chen Scientific reports 5		
<a href="#">Chemical sensing with switchable transport channels in graphene grain boundaries</a>	132	2014
P Yasaei, B Kumar, R Hantehzadeh, M Kayyalha, A Baskin, N Reprin, ... Nature communications 5 (1), 4911		
<a href="#">Electrical and thermal conductivities of reduced graphene oxide/polystyrene composites</a>	132	2014
W Park, J Hu, LA Jauregui, X Ruan, YP Chen Applied Physics Letters 104 (11), 113101		
<a href="#">Large-scale graphitic thin films synthesized on Ni and transferred to insulators: Structural and electronic properties</a>	128	2010
H Cao, Q Yu, R Colby, D Pandey, CS Park, J Lian, D Zemlyanov, ... Journal of Applied Physics 107 (4), 044310		

Enhanced graphene photodetector with fractal metasurface J Fang, D Wang, C DeVault, TF Chung, YP Chen, A Boltasseva, ... Lasers and Electro-Optics (CLEO), 2016 Conference on, 1-2	125	2016
Tuning a Schottky barrier in a photoexcited topological insulator with transient Dirac cone electron-hole asymmetry M Hajlaoui, E Papalazarou, J Mauchain, L Perfetti, A Taleb-Ibrahimi, ... Nature communications 5	123	2014
Photoassociation of a Bose-Einstein condensate near a Feshbach resonance M Junker, D Dries, C Welford, J Hitchcock, YP Chen, RG Hulet Physical review letters 101 (6), 060406	121	2008
Direct imaging of graphene edges: atomic structure and electronic scattering J Tian, H Cao, W Wu, Q Yu, YP Chen Nano letters 11 (9), 3663-3668	118	2011
Microwave resonance of the 2D Wigner crystal around integer Landau fillings Y Chen, RM Lewis, LW Engel, DC Tsui, PD Ye, LN Pfeiffer, KW West Physical review letters 91 (1), 016801	118	2003
Magnetic field-induced helical mode and topological transitions in a topological insulator nanoribbon LA Jauregui, MT Pettes, LP Rokhinson, L Shi, YP Chen Nature nanotechnology 11 (4), 345-351	115	2016
Modeling potentiometric measurements in topological insulators including parallel channels S Hong, V Diep, S Datta, YP Chen Physical Review B 86 (8), 085131	111	2012
Structural properties of Bi <sub>2</sub> Te <sub>3</sub> and Bi <sub>2</sub> Se <sub>3</sub> topological insulators grown by molecular beam epitaxy on GaAs (001) substrates X Liu, DJ Smith, J Fan, YH Zhang, H Cao, YP Chen, J Leiner, BJ Kirby, ... Applied Physics Letters 99 (17), 171903	109	2011
Melting of a 2D quantum electron solid in high magnetic field YP Chen, G Sambandamurthy, ZH Wang, RM Lewis, LW Engel, DC Tsui, ... Nature Physics 2 (7), 452-455	107	2006
Temperature dependence of Raman-active optical phonons in Bi <sub>2</sub> Se <sub>3</sub> and Sb <sub>2</sub> Te <sub>3</sub> Y Kim, X Chen, Z Wang, J Shi, I Miotkowski, YP Chen, PA Sharma, ... Applied Physics Letters 100 (7), 071907	105	2012
Quantum transport of two-species Dirac fermions in dual-gated three-dimensional topological insulators Y Xu, I Miotkowski, YP Chen Nature communications 7, 11434	101	2016

### Regular Journal Publications:

(Students or postdocs or staff/mentees of Chen are listed in *italic*)

[J189] Hang Xu, Yue Xue, Zhenqi Liu, Qing Tang, Tianyi Wang, Xichan Gao, *Yaping Qi*, Yong P. Chen, Chunlan Ma and Yucheng Jiang, “Van der Waals Heterostructures for Photoelectric, Memory, and Neural Network Applications”, **Small Science**, in press (2024)

[J188] *Yaping Qi*, Esther Xinyi Chen, *Dan Hu*, *Ying Yang*, Zhenping Wu, Ming Zheng, *Mohammad A. Sadi*, Yucheng Jiang, Kang Zhang, Zi Chen, Yong P. Chen, “Applications of Raman spectroscopy in clinical medicine”, **Food Frontiers** 1-28 (2024)



[J187] Chunlei Qu, *Chuan-Hsun Li*, Yong P. Chen, Sandro Stringari, "Scissors Modes of a Bose-Einstein Condensate in a Synthetic Magnetic Field", **Physical Review A**, 108, 053316 (2023)

[J186] Marco Bianchi, *Kimberly Hsieh*, Esben Juel Porat, Florian Dirnberger, Julian Klein, Kseniia Mosina, Zdenek Sofer, Alexander N. Rudenko, Mikhail I. Katsnelson, Yong P. Chen, Malte Rösner, Philip Hofmann, "Charge transfer-induced Lifshitz transition and magnetic symmetry breaking in ultrathin CrSBr crystals", **Physical Review B** 108, 195410 (2023)

[J185] Zhihao Jiang, *Kimberly Hsieh*, Alfred J. H. Jones, Paulina Majchrzak, Chakradhar Sahoo, Kenji Watanabe, Takashi Taniguchi, Jill A Miwa, Yong P. Chen and Søren Ulstrup, "Revealing flat bands and hybridization gaps in a twisted bilayer graphene device with microARPES", **2D Materials** 10, 045027 (2023)

[J184] Chin-Cheng Chiang, Hao-Yu Lan, *Lina Liu*, Yong P. Chen, Dmitry Zemlyanov, Joerg Appenzeller, Zhihong Chen, "Design and Process Co-Optimization of 2-D Monolayer Transistors via Machine Learning", **IEEE Transactions on Electron Devices** 70, 5991 (2023)

[J183] Shiva T. Konakanchi, Jukka I. Väyrynen, Yong P. Chen, Pramey Upadhyaya, Leonid P. Rokhinson, "Platform for Braiding Majorana Modes with Magnetic Skyrmions", **Physical Review Research** 5, 033109 (2023)

[J182] Xingyu Gao, Sumukh Vaidya, Peng Ju, Saakshi Dikshit, Kunhong Shen, Yong P. Chen, Tongcang Li, "Quantum sensing of paramagnetic spins in liquids with spin qubits in hexagonal boron nitride", **ACS Photonics** 10, 2894 (2023)

[J181] Klara Volckaerty, Paulina Majchrzaky, Deepnarayan Biswas, Alfred J. H. Jones, Marco Bianchi, Zhihao Jiang, Raphael Dubourg, Rasmus Ørnekoll Stenshøj, Mads Lykke Jensen, Nykola C. Jones, Søren V. Hoffmann, Jian-Li Mi, Martin Bremholm, *Xing-Chen Pan*, Yong P. Chen, Philip Hofmann, Jill A. Miwa, and Søren Ulstrup, "Surface electronic structure engineering of manganese bismuth tellurides guided by micro-focused angle-resolved photoemission", **Advanced Materials** 2301907 (2023)

[J180] *Guanghui Cheng*, Mohammad Mushfiqur Rahman, *Andres Llacsahuanga Allcca*, Avinash Rustagi, Xingtao Liu, Lina Liu, Lei Fu, Yanglin Zhu, Zhiqiang Mao, Kenji Watanabe, Takashi Taniguchi, Pramey Upadhyaya, Yong P. Chen, "Electrically tunable moiré magnetism in twisted double bilayer antiferromagnets", **Nature Electronics**, 6, 434 (2023)

Accompanying "Research Briefing": *Guanghui Cheng* and Yong P. Chen, "Twisted double bilayers of an antiferromagnet show tunable moiré magnetism", **Nature Electronics** 6,403 (2023)

[J179] *Yaping Qi*, *Dan Hu*, Yucheng Jiang, Zhenping Wu, Ming Zheng, Esther Xinyi

Chen, Yong Liang, *Mohammad A. Sadi*, Kang Zhang, Yong P. Chen, "Recent Progresses in Machine Learning Assisted Raman Spectroscopy", **Advanced Optical Materials**, 2203104 (2023)

[J178] Paulina Majchrzak, Klara Volckaert, Deepnarayan Biswas, Denny Puntel, Wibke Bronsch, Federico Cilento, *Xing-Chen Pan*, Yong P. Chen, Søren Ulstrup, "Van der Waals engineering of ultrafast carrier dynamics in magnetic heterostructures", **Nano Letters** 23, 414 (2023)

[J177] *Yaping Qi*, *Mohammad A. Sadi*, *Dan Hu*, Ming Zheng, Zhenping Wu, Yucheng Jiang, Yong P. Chen, "Recent Progress in Strain Engineering on Van der Waals 2D Materials: Tunable Electrical, Electrochemical, Magnetic and Optical Properties", **Advanced Materials** 2205714 (2023)

[J176] Xiaohui Xu, Abhishek. B. Solanki, Demid Sychev, Xingyu Gao, Samuel Peana, Aleksandr S. Baburin, Karthik Pagadala, Zachariah O. Martin, Sarah N. Chowdhury, Yong P. Chen, Ilya A. Rodionov, Alexander V. Kildishev, Tongcang Li, Pramey Upadhyaya, Alexandra Boltasseva, Vladimir M. Shalaev, "Greatly Enhanced Emission from Spin Defects in Hexagonal Boron Nitride Enabled by a Low-Loss Plasmonic Nano-Cavity", **Nano Letters** 23, 25 (2022)

[J175] *Guanghai Cheng*, Mohammad Mushfiqur Rahman, *Zhiping He*, *Andres Llacsahuanga Allcca*, Avinash Rustagi, *Kirstine Aggerbeck Stampe*, Yanglin Zhu, Shaohua Yan, Shangjie Tian, Zhiqiang Mao, Hechang Lei, Kenji Watanabe, Takashi Taniguchi, Pramey Upadhyaya, Yong P. Chen, "Emergence of electric-field-tunable interfacial ferromagnetism in 2D antiferromagnet heterostructures", **Nature Communications** 13, 7348 (2022)

[J174] *Andres E. Llacsahuanga Allcca*, *Xing-Chen Pan*, *Ireneusz Miotkowski*, Katsumi Tanigaki, Yong P. Chen, "Gate-tunable anomalous Hall effect in stacked van der Waals ferromagnetic insulator - topological insulator heterostructures", **Nano Letters** 22, 8130 (2022)

[J173] Xingyu Gao, Sumukh Vaidya, Kejun Li, Peng Ju, Boyang Jiang, Zhujing Xu, *Andres E. Llacsahuanga Allcca*, Kunhong Shen, Takashi Taniguchi, Kenji Watanabe, Sunil A. Bhave, Yong P. Chen, Yuan Ping, Tongcang Li, "Nuclear spin polarization and control in a van der Waals material", **Nature Materials** 21,1024 (2022)

[J172] *Isaac Childres*, *Yaping Qi*, *Mohammad A. Sadi*, *John F. Ribeiro*, *Helin Cao* and Yong P. Chen, "Combined Raman Spectroscopy and Magneto-Transport Measurements in Disordered Graphene: Correlating Raman D Band and Weak Localization Features", **Coatings** 12, 1137 (2022)

[J171] Abhishek Bharatbhai Solanki, Simeon I. Bogdanov, Avinash Rustagi, Neil R. Dilley, Tingting Shen, Mohammad Mushfiqur Rahman, Wenqi Tong, Punyashloka Debashis, Zhihong Chen, Joerg Appenzeller, Yong P. Chen, Vladimir M. Shalaev, and

Pramey Upadhyaya. "Electric field control of interaction between magnons and quantum spin defects", **Physical Review Research** 4, L012025 (2022)

[J170] *Jana Lustikova*, Rui-Feng Wang, Yong Zhong, ShuZe Wang, *Akichika Kumatani*, Xucun Ma, Qi-Kun Xue and Yong P. Chen, "Magnetotransport of thin film Sr<sub>1-x</sub>LaxCuO<sub>2</sub> on (110) DyScO<sub>3</sub>", **Japanese Journal of Applied Physics** 61, 04090 (2022)

[J169] *Chuan-Hsun Li*, Yangqian Yan, Sayan Choudhury, *David B. Blasing*, Qi Zhou, and Yong P. Chen, "A Bose-Einstein Condensate on a Synthetic Hall Cylinder", **PRX Quantum** 3, 010316 (2022)

[J168] Sumit Suresh Kale, Yong P. Chen, Sabre Kais, "Constructive Quantum Interference in Photochemical Reactions", **Journal of Chemical Theory and Computation** 17, 7822 (2021)

[J167] *Jifa Tian*, *Luis A Jauregui*, Chris Wilen, Albert Rigosi, David B Newell, Robert McDermott, Yong P. Chen, "A Josephson Junction with h-BN tunnel barrier: observation of low critical current noise", **Journal of Physics: Condensed Matter** 33, 495301 (2021)

[J166] *Lina Liu*, Dmitry Zemlyanov, and Yong P. Chen. "Epitaxial Growth of Monolayer PdTe<sub>2</sub> and Patterned PtTe<sub>2</sub> by Direct Tellurization of Pd and Pt surfaces", **2D Materials** 8, 045033 (2021)

[J165] Xiaohui Xu, Zachariah O. Martin, *Demid Sychev*, Alexei S. Lagutchev, Yong Chen, Takashi Taniguchi, Kenji Watanabe, Vladimir M. Shalaev, Alexandra Boltasseva, "Creating Quantum Emitters in Hexagonal Boron Nitride Deterministically on Chip-Compatible Substrates", **Nano Letters** 21, 8182 (2021)

[J164] Xingyu Gao, Boyang Jiang, *Andres E. Llacsahuanga Allecca*, Kunhong Shen, *Mohammad A. Sadi*, Abhishek B. Solanki, Peng Ju, Zhujing Xu, Pramey Upadhyaya, Yong P. Chen, Sunil A. Bhawe, Tongcang Li, "High-contrast plasmonic-enhanced shallow spin defects in hexagonal boron nitride for quantum sensing", **Nano Letters** 21, 7708 (2021)

[J163] Jimin Wang, Alexander Kurzendorfer, Lin Chen, Zhiwei Wang, Yoichi Ando, *Yang Xu*, Ireneusz Miotkowski, Yong P. Chen, and Dieter Weiss, "Mobility spectrum analysis on three-dimensional topological insulator BiSbTeSe<sub>2</sub>", **Applied Physics Letters** 118, 253107 (2021)

[J162] *Jifa Tian*, Cüneyt Şahin, Ireneusz Miotkowski, Michael E Flatté, and Yong P. Chen, "Opposite current-induced spin polarizations in bulk-metallic Bi<sub>2</sub>Se<sub>3</sub> and bulk-insulating Bi<sub>2</sub>Te<sub>2</sub>Se topological insulator thin flakes", **Physical Review B** 103, 035412 (2021)

[J161] *Jiuning Hu*, Albert F. Rigosi, David B. Newell, and Yong P. Chen,

"Thermoelectric transport in coupled double layers with interlayer excitons and exciton condensation", **Physical Review B** 102, 235304 (2020)

[J160] Yijue Ding, Sumit Suresh Kale, Yong P. Chen, Bretislav Friedrich, and Sabre Kais. "Spin-momentum entanglement in a Bose-Einstein condensate", **Physical Chemistry Chemical Physics** 22, 25669 (2020)

[J159] Shouyuan Huang, Ireneusz Miotkowski, Yong P. Chen, and Xianfan Xu, "Deep tuning of photo-thermoelectricity in topological surface states", **Scientific Reports** 10, 16761 (2020)

[J158] Di Wang, *Andres E. Llacsahuanga Allcca*, *Ting-Fung Chung*, Alexander V. Kildishev, Yong P. Chen, Alexandra Boltasseva, and Vladimir M. Shalaev, "Enhancing graphene photocurrent using surface plasmons and p-n junction", **Light: Science & Applications** 9, 126 (2020)

[J157] Jung Woo Leem, *Andres E. Llacsahuanga Allcca*, Yong Jae Kim, Jongwoo Park, Seong-Wan Kim, Seong-Ryul Kim, WongHyoung Ryu, Yong P. Chen, and Young L. Kim, "Photoelectric silk via genetic encoding and bio-assisted plasmonics", **Advanced Biosystems** 4, 2000040 (2020)

[J156] *Morteza Kayyalha*, Aleksandr Kazakov, Ireneusz Miotkowski, Sergei Khlebnikov, Leonid P. Rokhinson, Yong P. Chen, "Highly skewed current-phase relation in superconductor-topological insulator-superconductor Josephson junctions", **npj Quantum Materials** 5, 7 (2020)

[J155] Shuanglong Liu, *Yang Xu*, Yun-Peng Wang, Yong P. Chen, James N. Fry, and Hai-Ping Cheng, "Gate field effects on the topological insulator BiSbTeSe<sub>2</sub> interface", **Applied Physics Letters** 116, 031601 (2020)

[J154] *H. Idzuchi*, *A. E. Llacsahuanga Allcca*, X. C. Pan, K. Tanigaki, and Y. P. Chen, "Increased Curie temperature and enhanced perpendicular magneto anisotropy of Cr<sub>2</sub>Ge<sub>2</sub>Te<sub>6</sub>/NiO heterostructure", **Applied Physics Letters** 115, 232403 (2019)

[J153] *Yang Xu*, Guodong Jiang, Ireneusz Miotkowski, Rudro R. Biswas, and Yong P. Chen, "Tuning insulator-semimetal transitions in 3D topological insulator thin films by inter-surface hybridization and in-plane magnetic fields", **Physical Review Letters** 123, 207701 (2019)

[J152] Prabhu K. Venuthurumilli, Xiaolei Wen, Vasudevan Iyer, Yong P. Chen, Xianfan Xu, "Near-Field Imaging of Surface Plasmons from the Bulk and Surface State of Topological Insulator Bi<sub>2</sub>Te<sub>2</sub>Se", **ACS Photonics** 6, 2492-2498 (2019)

[J151] *Jifa Tian*, Seokmin Hong, Shehrin Sayed, Joon Sue Lee, Supriyo Datta, Nitin Samarth, Yong P. Chen, "On the understanding of current-induced spin polarization of three-dimensional topological insulators", **Nature Communications** 10, 1461 (2019)

[J150] Yanlong Li, Xiaoyang Liu, Chuanhui Chen, James Duchamp, Rong Huang, *Ting-Fung Chung*, Maxwell Young, Tarek Chalal, Yong P. Chen, James R. Heflin, Harry Dorn, and Chenggang Tao, "Differences in Self-Assembly of Spherical C60 and Planar PTCDA on Rippled Graphene Surfaces", **Carbon** 145, 549 (2019)

[J149] *Morteza Kayyalha*, Mehdi Kargarian, Aleksandr Kazakov, Ireneusz Miotkowski, Victor M. Galitski, Victor M. Yakovenko, Leonid P. Rokhinson, Yong P. Chen, "Anomalous low-temperature enhancement of supercurrent in topological-insulator nanoribbon Josephson junctions: evidence for low-energy Andreev bound states", **Physical Review Letters** 122, 047003 (2019)

[J148] *Chuan-Hsun Li*, Chunlei Qu, *Robert J. Niffenegger*, Su-Ju Wang, Mingyuan He, *David B. Blasing*, *Abraham J. Olson*, Chris H. Greene, Yuli Lyanda-Geller, Qi Zhou, Chuanwei Zhang & Yong P. Chen, "Spin current generation and relaxation in a quenched spin-orbit coupled Bose-Einstein condensate", **Nature Communications** 10, 375 (2019)

[J147] Hyoungdo Nam, *Yang Xu*, Ireneusz Miotkowski, *Jifa Tian*, Yong P. Chen, Chang Liu, M. Zahid Hasan, Wenguang Zhu, Gregory A. Fiete, and Chih-Kang Shih, "Microscopic investigation of Bi<sub>2-x</sub>Sb<sub>x</sub>Te<sub>3-y</sub>Se<sub>y</sub> systems: on the origin of a robust intrinsic topological insulator", **Journal of Physics and Chemistry of Solids** 128, 251 (2019)

[J146] Jung Woo Leem, *Andres E. Llacsahuanga Allcca*, Junjie Chen, Seong-Wan Kim, Kee-Young Kim, Kwang-Ho Choi, Yong P. Chen, Seong-Ryul Kim, and Young L. Kim, "Visible light biophotosensors using biliverdin from *Antheraea yamamai*", **Optics Express** 26, 31817 (2018)

[J145] *David B. Blasing*, Jesús Pérez-Ríos, Yangqian Yan, *Sourav Dutta*, *Chuan-Hsun Li*, Qi Zhou, Yong P. Chen, "Observation of Quantum Interference and Coherent Control in a Photo-Chemical Reaction", **Physical Review Letters** 121, 073202 (2018)

[J144] Jonghoon Ahn, Zhujing Xu, Jaehoon Bang, *Andres E. Llacsahuanga Allcca*, Yong P. Chen, and Tongcang Li, "Stable emission and fast optical modulation of quantum emitters in boron nitride nanotubes", **Optics Letters** 43, 3778 (2018)

[J143] *Ting-Fung Chung*, *Yang Xu*, Yong P. Chen, "Transport measurements in twisted bilayer graphene: Studies of electron-phonon coupling and Landau level crossing", **Physical Review B** 98, 035425 (2018)

[J142] Vasudevan Iyer, Yong P. Chen, and Xianfan Xu, "Ultrafast Surface State Spin-Carrier Dynamics in Topological Insulator Bi<sub>2</sub>Te<sub>2</sub>Se", **Physical Review Letters** 121, 026807 (2018)

[J141] Cheng Zhang, Hai-Zhou Lu, Shun-Qing Shen, Yong P. Chen, Faxian Xiu, "Towards the manipulation of topological states of matter: a perspective from electron

transport” (review), **Science Bulletin** 63, 580 (2018)

[J140] *Luis A. Jauregui\**, *Morteza Kayyalha\**, Aleksandr Kazakov, Ireneusz Miotkowski, Leonid P. Rokhinson, and Yong P. Chen, “Gate-tunable supercurrent and multiple Andreev reflections in a superconductor-topological insulator nanoribbon-superconductor hybrid device” (\*equal contribution), **Applied Physics Letters**, 112, 093105 (2018)

[J139] Zhe Luo\*, *Jifa Tian\**, Shouyuan Huang, Mithun Srinivasan, Jesse Maassen, Yong P. Chen, Xianfan Xu, “Large Enhancement of Thermal Conductivity and Lorenz Number in Topological Insulator Thin Films” (\*equal contribution), **ACS Nano**, 12, 1120 (2018)

[J138] Long Yuan, *Ting-Fung Chung*, Agnieszka Kuc, Yan Wan, *Yang Xu*, Yong P. Chen, Thomas Heine, Libai Huang, "Photocarrier Generation from Interlayer Charge-Transfer Transitions in WS<sub>2</sub>-Graphene Heterostructures", **Science Advances** 4, e1700324 (2018)

[J137] F. Hu, Suprem R. Das, Y. Luan, *T.-F. Chung*, Y. P. Chen, Z. Fei. "Real-Space Imaging of the Tailored Plasmons in Twisted Bilayer Graphene". **Physical Review Letters** 119, 247402 (2017)

[J136] Xiangyu Li, *Wonjun Park*, Yong P. Chen, and Xiulin Ruan, "Absence of coupled thermal interfaces in Al<sub>2</sub>O<sub>3</sub>/Ni/Al<sub>2</sub>O<sub>3</sub> sandwich structure", **Applied Physics Letters** 111, 143102 (2017)

[J135] S. M. Hus, X.-G. Zhang, G. D. Nguyen, A. P. Baddorf, Y. P. Chen and A. Li, “Detection of Spin Chemical Potential in Topological Insulators Using Spin-Polarized Four-Probe STM”, **Physical Review Letters** 119, 137202 (2017)

[J134] *J. Hu*, *T. Wu*, *J. Tian*, N.N. Klimov, D.B. Newell, Y.P. Chen, "Coulomb drag and counterflow Seebeck coefficient in bilayer-graphene double layers", **Nano Energy** 40, 42 (2017)

[J133] Han Peng, Niels B. M. Schröter, Jianbo Yin, Huan Wang, *Ting-Fung Chung*, Haifeng Yang, Sandy Ekahana, Zhongkai Liu, Juan Jiang, Lexian Yang, Teng Zhang, Cheng Chen, Heng Ni, Alexey Barinov, Yong P. Chen, Zhongfan Liu, Hailin Peng, and Yulin Chen, "Substrate Doping Effect and Unusually Large Angle van Hove Singularity Evolution in Twisted Bi- and Multilayer Graphene", **Advanced Materials** 29, 1606741 (2017)

[J132] *Biddut K. Sarker\**, Edward Cazalas\*, *Ting-Fung Chung\**, *Isaac Childres*, Igor Jovanovic and Yong P. Chen (\*equal contribution), “Position dependent and millimeter-range photodetection in phototransistors with micron-scale graphene on SiC”, **Nature Nanotechnology** 12, 668 (2017)

[J131] *Jifa Tian*, Seokmin Hong, Ireneusz Miotkowski, Supriyo Datta, Yong P. Chen, “Observation of current-induced, long-lived persistent spin polarization in a topological

insulator: a rechargeable spin battery”, **Science Advances** 3, e1602531 (2017)

[J130] *Abraham J. Olson, David B. Blasing, Chunlei Qu, Chuan-Hsun Li, Robert J. Niffenegger, Chuanwei Zhang, and Yong P. Chen*, “Stueckelberg interferometry using periodically driven spin-orbit-coupled Bose-Einstein condensates”, **Physical Review A** 95, 043623 (2017)

[J129] *Wonjun Park, Xiangyu Li, Nirajan Mandal, Xiulin Ruan and Yong P. Chen*, “Compressive mechanical response of graphene foams and their thermal resistance with copper interfaces”, **APL Materials** 5, 036102 (2017)

[J128] *Sourav Dutta, Jesús Pérez-Ríos, D. S. Elliott and Yong P. Chen*, "Two-photon photoassociation spectroscopy of an ultracold heteronuclear molecule", **Physical Review A** 95, 013405 (2017)

[J127] *Jieran Fang, Di Wang, Clayton T. DeVault, Ting-Fung Chung, Yong P. Chen, Alexandra Boltasseva, Vladimir M. Shalaev, and Alexander V. Kildishev*, "Enhanced Graphene Photodetector with Fractal Metasurface", **Nano Letters** 17, 57 (2017)

[J126] *Xiangyu Li, Wonjun Park, Yong P. Chen and Xiulin Ruan*, "Effect of Particle Size and Aggregation On Thermal Conductivity Of Metal-Polymer Nanocomposite", **Journal of Heat Transfer** 139, 022401 (2017)

[J125] *Edward Cazales, Bidut K. Sarker, Isaac Childres, Yong P. Chen, and Igor Jovanovic*, "Modulation of Graphene Field Effect by Heavy Charge Particle Irradiation", **Applied Physics Letters** 109, 253501 (2016)

[J124] *I. C. Stevenson, D. Blasing, Y. P. Chen, D. S. Elliott*, “Production of ultracold ground state LiRb molecules by photoassociation through a resonantly coupled state”, **Physical Review A** 94, 062510 (2016)

[J123] *Koushik Ramadoss, Nirajan Mandal, Xia Dai, Zhong Wan, You Zhou, Leonid Rokhinson, Yong P. Chen, Jiangpin Hu and Shriram Ramanathan*, “Sign reversal of magnetoresistance in a perovskite nickelate by electron doping”, **Physical Review B** 94, 235124 (2016)

[J122] *David B. Blasing, Ian C. Stevenson, Jesús Pérez-Ríos, Daniel S. Elliott, Yong P. Chen*, “Short-range Photoassociation of LiRb”, **Physical Review A** 94, 062504 (2016)

[J121] *I. Stevenson, D. Blasing, A. Altaf, Y. P. Chen, D. S. Elliott*, “The d3II state of LiRb”, **Journal of Chemical Physics** 145, 224301 (2016)

[J120] *Yaowu Hu, Ji Li, Jifa Tian, Yi Xuan, Biwei Deng, Kelly L. McNear, Daw Gen Lim, Yong P. Chen, Chen Yang, and Gary J. Cheng*, "Parallel nanoshaping of brittle semiconductor nanowires for strained electronics", **Nano Letters** 16, 7536 (2016)

- [J119] I. C. Stevenson, *D. B. Blasing*, *Y. P. Chen*, D. S. Elliott, “The  $C1\Sigma^+$ ,  $A1\Sigma^+$ , and  $b3\Pi0^+$  states of LiRb”, **Physical Review A** 94, 062503 (2016)
- [J118] S. Jain, *Wonjun Park*, *Y. P. Chen* and L. Qiao, "Flame speed enhancement of a nitrocellulose monopropellant using graphene microstructures", **Journal of Applied Physics** 120, 174902 (2016)
- [J117] *Morteza Kayyalha*, Jesse Maassen, Mark Lundstrom, Li Shi, *Yong P. Chen*, "Gate-Tunable and Thickness-dependent Electronic and Thermoelectric Transport in few-layer  $\text{MoS}_2$ ", **Journal of Applied Physics** 120, 134305 (2016)
- [J116] Guang Bian, *Ting-Fung Chung*, Chang Liu, Chaoyu Chen, Tay-Rong Chang, *Tailung Wu*, Ilya Belopolski, Hao Zheng, Su-Yang Xu, Daniel S. Sanchez, Nasser Alidoust, Jonathan Pierce, Bryson Quilliams, Philip P. Barletta, Stephane Lo, Jose Avila, Guoqing Chang, Hsin Lin, Horng-Tay Jeng, Maria-Carmen Asensio, *Yong P. Chen*, M. Zahid Hasan, "Experimental Observation of Two Massless Dirac-Fermion Gases in Graphene-Topological Insulator Heterostructure", **2D Materials** 3, 021009 (2016)
- [J115] *Yang Xu*, Ireneusz Miotkowski, *Yong P. Chen*, "Quantum transport of two-species Dirac fermions in dual-gated three-dimensional topological insulators", **Nature Communications** 7, 11434 (2016)
- [J114] L.-C. Tung, W. Yu, P. Cadden-Zimansky, I. Miotkowski, *Y. P. Chen*, D. Smirnov, Z. Jiang, "Magneto-Infrared Spectroscopic Study of Ultrathin  $\text{Bi}_2\text{Te}_3$  Single Crystals", **Physical Review B** 93, 085140 (2016)
- [J113] Corentin Durand, X.-G. Zhang, Saban M. Hus, Chuanxu Ma, Michael A. McGuire, *Yang Xu*, *Helin Cao*, Ireneusz Miotkowski, *Yong P. Chen*, & An-Ping Li, "Differentiation of surface and bulk conductivities in topological insulator via four-probe spectroscopy", **Nano Letters** 16, 2213 (2016)
- [J112] *Luis A. Jauregui*, Michael T. Pettes, Leonid P. Rokhinson, Li Shi, *Yong P. Chen*, “Magnetic field induced helical mode and topological transitions in a quasi-ballistic topological insulator nanoribbon with circumferentially quantized surface state sub-bands”, **Nature Nanotechnology** 11, 345 (2016)
- [J111] *Yong P. Chen*, “Raman Spectroscopic Studies of Graphene and Related Nanomaterials” (review & Masao Horiba Award paper), Horiba Technical Journal “**Readout**”, Sept. 2015 Special Issue, p.39 (2015)
- [J110] *Wonjun Park*, Yufen Guo, Xiangyu Li, *Jiuning Hu*, Liwei Liu, Xiulin Ruan, *Yong P. Chen*, "High-performance thermal interface material based on few-layer graphene composite", **Journal of Physical Chemistry C** 119, 26753 (2015)
- [J109] Nauman Z. Butt, *Biddut K. Sarker*, *Yong P. Chen*, and Muhammad Ashraful Alam, “Substrate induced Photo-field Effect in Graphene Phototransistors”, **IEEE**



**Transactions on Electron Devices** 62, 3734 (2015)

[J108] Naresh K. Emani, Di Wang, *Ting-Fung Chung*, Ludmila J. Prokopeva, Alexander V. Kildishev, Vladimir M. Shalaev, Yong P. Chen, and Alexandra Boltasseva, “Plasmon Resonance in Multilayer Graphene Nanoribbons”, **Laser and Photonics Reviews** 9, 650 (2015)

[J107] Qiong Nian, Mojib Saei, *Yang Xu*, Sabyasachi Ganguli, Biwei Deng, Yong P. Chen, and Gary J. Cheng, “Crystalline Nanojoining Silver Nanowire Percolated Networks on Flexible Substrate”, **ACS Nano** 9, 10018 (2015)

[J106] Fan W. Chen, *Luis A. Jauregui*, Yaohua Tan, Michael Manfra, Yong P. Chen, Gerhard Klimeck, Tillmann Kubis, “In-surface confinement of topological insulator nanowire surface states”, **Applied Physics Letters** 107, 121605 (2015)

[J105] Chang Liu, Guang Bian, Su-Yang Xu, Ilya Belopolski, Irek Miotkowski, *Helin Cao*, Koji Miyamoto, Tay-Rong Chang, Hsin Lin, Christian Matt, Thorsten Schmitt, Nasser Alidoust, Madhab Neupane, Horng-Tay Jeng, Arun Bansil, Vladimir N. Strocov, Mark Bissen, Alexei V. Fedorov, Taichi Okuda, Yong P. Chen, and M. Zahid Hasan, “Tunable spin helical Dirac quasiparticles on the surface of three dimensional HgTe”, **Physical Review B** 92, 115436 (2015)

[J104] *Jifa Tian*, Ireneusz Miotkowski, Seokmin Hong, and Yong P. Chen, “Electrical injection and detection of spin-polarized currents in topological insulator Bi<sub>2</sub>Te<sub>2</sub>Se”, **Scientific Reports** 5, 14293 (2015)

[J103] *Morteza Kayyalha* and Yong P. Chen, “Observation of reduced 1/f noise in Graphene field effect transistors on Boron Nitride substrates”, **Applied Physics Letters** 107, 113101 (2015)

[J102] Junjie Li, Weixia Zhang, *Ting-Fung Chung*, Mikhail N. Slipchenko, Yong P. Chen, Ji-Xin Cheng, Chen Yang, “Label-free transient absorption imaging of graphene and graphene oxide in living cells and circulating blood”, **Scientific Reports** 5, 12394 (2015)

[J101] Edward Cazalas, *Biddut K. Sarker*, Michael E. Moore, Isaac Childres, Yong P. Chen, and Igor Jovanovic, “Position Sensitivity of Graphene Field Effect Transistors to X-rays”, **Applied Physics Letters** 106, 223503 (2015)

[J100] Jesús Pérez-Ríos, *Sourav Dutta*, Yong P. Chen, Chris H. Greene, “Quantum Defect Theory description of weakly bound levels and Feshbach resonances in LiRb”, **New Journal of Physics** 17, 045021 (2015)

[J99] Adeel Altaf, *Sourav Dutta*, John Lorenz, Jesús Pérez-Ríos, Yong P. Chen, D. S. Elliott, “Formation of ultracold <sup>7</sup>Li<sup>85</sup>Rb molecules in the lowest triplet electronic state by photoassociation and their detection by ionization spectroscopy”, **Journal of Chemical**

**Physics** 142, 114310 (2015)

[J98] Eryin Wang, Peizhe Tang, Guoliang Wan, Alexei V. Fedorov, Ireneusz Miotkowski, Yong Chen, Wenhui Duan and Shuyun Zhou, "Robust gapless surface state and Rashba-splitting bands upon surface deposition of magnetic Cr on Bi<sub>2</sub>Se<sub>3</sub>", **Nano Letters** 15, 2031 (2015)

[J97] *Luis A. Jauregui*, Michael T. Pettes, Leonid P. Rokhinson, Li Shi, Yong P. Chen, "Gate Tunable Relativistic Mass and Berry's phase in Topological Insulator Nanoribbon Field Effect Devices", **Scientific Reports** 5, 8452 (2015)

[J96] *Ting-Fung Chung*, Rui He, *Tai-Lung Wu*, Yong P. Chen, "Optical Phonons in Twisted Bilayer Graphene with Gate-Induced Asymmetric Doping", **Nano Letters** 15, 1203 (2015)

[J95] John Lorenz, Adeel Altaf, *Sourav Dutta*, Yong P. Chen, D. S. Elliott, "Formation of deeply bound ultracold LiRb molecules via photoassociation near the Li 2S<sub>1/2</sub> + Rb 5P<sub>3/2</sub> asymptote", **Physical Review A** 90, 062513 (2014)

[J94] *Isaac Childres*, *Luis A. Jauregui*, Yong P. Chen, "Raman spectra and electron-phonon coupling in disordered graphene with gate-tunable doping", **Journal of Applied Physics** 116, 233101(2014)

[J93] *Yang Xu*, Ireneusz Miotkowski, Chang Liu, *Jifa Tian*, Hyoungdo Nam, Nasser Alidoust, *Jiuning Hu*, Chih-Kang Shih, M. Zahid Hasan, Yong P. Chen, "Observation of topological surface state quantum Hall effect in an intrinsic three-dimensional topological insulator", **Nature Physics** 10, 956 (2014)

[J92] Suprem R. Das, Cem Akatay, Asaduzzaman Mohammad, Mohammad Ryyan Khan, Kosuke Maeda, Russell S. Deacon, Koji Ishibashi, Yong P. Chen, Timothy D. Sands, Muhammad A. Alam, and David B. Janes, "Electrodeposition of InSb Branched Nanowires: Controlled Growth with Structurally Tailored Properties", **Journal for Applied Physics** 116, 083506 (2014)

[J91] Poya Yasaei, Bijandra Kumar, Reza Hantehzadeh, *Morteza Kayyalha*, Artem Baskin, Nikita Replin, Canhui Wang, Robert F. Klie, Yong P. Chen, Petr Král, Amin Salehi-Khojin, "Chemical Sensing with Switchable Transport Channels in Graphene Grain Boundaries", **Nature Communications** 5, 4911 (2014)

[J90] Oleg Yazyev and Yong P. Chen, "Polycrystalline graphene and other two-dimensional materials" (invited review article), **Nature Nanotechnology** 9, 755 (2014)

[J89] *Abraham J. Olson*, Su-Ju Wang, *Robert J. Niffenegger*, *Chuan-Hsun Li*, Chris H. Greene, Yong P. Chen, "Tunable Landau-Zener transitions in a spin-orbit coupled Bose-Einstein condensate", **Physical Review A** 90, 013616 (2014)

[J88] *Jifa Tian*, Cuizu Chang, *Helin Cao*, Ke He, Xucun Ma, Qikun Xue, Yong P. Chen, "Quantum and Classical Magnetoresistance in Ambipolar Topological Insulator Transistors with Gate-tunable Bulk and Surface Conduction", **Scientific Reports** 4, 4859 (2014)

[J87] *Jifa Tian*, *Isaac Childres*, *Helin Cao*, *Shen Tian*, Ireneusz Miotkowski, Yong P. Chen, "Topological insulator based spin valve devices: evidence for spin polarized transport of spin-momentum-locked topological surface states", **Solid State Communications** 191, 1 (2014)

[J86] *Sourav Dutta*, Adeel Altaf, John Lorenz, D. S. Elliott, and Yong P. Chen, "Interspecies collision-induced losses in a dual species  $^7\text{Li}$ - $^{85}\text{Rb}$  magneto-optical trap", **Journal of Physics B: Atomic and Molecular Physics** 47, 105301 (2014)

[J85] Zhe Luo, Han Liu, Bryan T. Spann, Yanhui Feng, Peide Ye, Yong P. Chen, and Xianfan Xu, "Measurement of In-Plane Thermal Conductivity of Ultrathin Films Using Micro-Raman Spectroscopy", **Nanoscale and Microscale Thermophysical Engineering**, 18, 183 (2014)

[J84] Chris Mann, Damien West, Ireneusz Miotkowski, Yong P. Chen, Shengbai Zhang, Chih-Kang Shih, "Observation of Coulomb repulsion between Cu intercalants in  $\text{Cu}_x\text{Bi}_2\text{Se}_3$ ", **Physical Review B** 89, 155312 (2014)

[J83] Ke Chen, Huihui Li, Lai-Peng Ma, Wencai Ren, *Ting-Fung Chung*, Hui-Ming Cheng, Yong P. Chen, Tianshu Lai, "Diversity of ultrafast hot-carrier-induced dynamics and striking sub-femtosecond hot-carrier scattering times in graphene", **Carbon**, 72, 402 (2014)

[J82] *Wonjun Park*, *Jiuning Hu*, *Luis A. Jauregui*, Xiulin Ruan and Yong P. Chen, "Electrical and thermal conductivities of reduced graphene oxide (RGO)/polystyrene (PS) composites", **Applied Physics Letters** 104, 113101 (2014)

[J81] *Sourav Dutta*, Adeel Altaf, John Lorenz, Daniel S. Elliott, Yong P. Chen, "Photoassociation of ultracold LiRb molecules: observation of high efficiency and rate saturation", **Physical Review A Rapid Communications**, 89, 020702(R) (2014)

[J80] Yan Wang, Ajit Kumar Vallabhaneni, *Jiuning Hu*, Bo Qiu, Yong P. Chen and Xiulin Ruan, "Phonon Lateral Confinement Enables Thermal Rectification in Asymmetric Single-Material Nanostructures", **Nano Letters** 14, 592 (2014)

[J79] Weixia zhang, Sudarat Lee, Kelly McNear, *Ting Fung Chung*, Seunghyun Lee, Kyunghoon Lee, Scott A. Crist, Timothy L. Ratliff, Zhaohui Zhong, Yong P. Chen, and Chen Yang, "Use of Graphene as Protection Film in Biological Environments", **Scientific Reports** 4, 4097 (2014)

[J78] Naresh K. Emani, *Ting-Fung Chung*, Alexander V. Kildishev, Vladimir M.

Shalaev, Yong P. Chen, and Alexandra Boltasseva, “Electrical Modulation of Fano Resonance in Plasmonic Nanostructures Using Graphene”, **Nano Letters** 14, 78 (2014)

[J77] M. Hajlaoui, E. Papalazarou, J. Mauchain, L. Perfetti, A. Taleb-Ibrahimi, F. Navarin, M. Monteverde, P. Auban-Senzier, C.R. Pasquier, N. Moisan, D. Boschetto, M. Neupane, M.Z. Hasan, T. Durakiewicz, Z. Jiang, *Y. Xu*, I. Miotkowski, Y.P. Chen, S. Jia, H. Ji, R.J. Cava and M. Marsi, “Tuning a Schottky barrier in a photoexcited topological insulator with transient Dirac cone electron-hole asymmetry”, **Nature Communications** 5, 3003 (2014)

[J76] *Sourav Dutta*, D. S. Elliott, Yong P. Chen, “Formation of ultracold LiRb molecules by photoassociation near the Li (2s 2S1/2) + Rb (5p 2P1/2) asymptote”, **Europhysics Letters** 4, 4097 (2013)

[J75] *Abraham J. Olson*, Daniel L. Whitenack, Yong P. Chen, “Effects of magnetic dipole-dipole interactions in atomic Bose-Einstein condensates with tunable s-wave interactions”, **Physical Review A** 88, 043609 (2013)

[J74] M. Hajlaoui, E. Papalazarou, J. Mauchain, Z. Jiang, I. Miotkowski, Y. P. Chen, A. Taleb-Ibrahimi, L. Perfetti, M. Marsi, “Time resolved ultrafast ARPES for the study of topological insulators: The case of Bi2Te3”, **The European Physical Journal Special Topics** 222, (Issue 5, Special Issue “Electronic States and Phases Induced by Electric or Optical Impacts”), 1271 (2013)

[J73] *Jifa Tian*, Yongjin Jiang, *Isaac Childres*, *Helin Cao*, Jiangping Hu, and Yong P. Chen, “Quantum Hall effect in monolayer-bilayer graphene planar junctions”, **Physical Review B** 88, 125410 (2013)

[J72] Rui He\*, *Ting-Fung Chung\**, Conor Delaney, *Courtney Keiser [undergraduate REU student]*, *Luis A. Jauregui*, Paul M. Shand, C. C. Chancey, Yanan Wang, Jiming Bao, and Yong P. Chen (\*equal contribution), “Observation of Low Energy Raman Modes in Twisted Bilayer Graphene”, **Nano Letters** 13, 3594 (2013)

[J71] Chris Mann, Damien West, Ireneusz Miotkowski, Yong P. Chen, Shengbai Zhang, Chih-Kang Shih, “Mapping the 3D surface potential in Bi2Se3”, **Nature Communications** 4, 2277 (2013)

[J70] Edward Cazalas, *Isaac Childres*, Amanda Majcher, *Ting-Fung Chung*, Yong P. Chen and Igor Jovanovic, “Hysteretic Response of Chemical Vapor Deposition Graphene Field Effect Transistors on SiC Substrates”, **Applied Physics Letters** 103, 053123 (2013)

[J69] *Abraham J. Olson*, *Robert J. Niffenegger*, Yong P. Chen, “Optimizing the efficiency of evaporative cooling in optical dipole traps”, **Physical Review A** 87, 053613 (2013)

- [J68] *Jiuning Hu* and Yong P. Chen, “Existence of negative differential thermal conductance in one-dimensional diffusive thermal transport”, **Physical Review E** 87, 062104 (2013)
- [J67] *T-F. Chung, Tian Shen, Helin Cao, Luis A. Jauregui, Wei Wu, Qingkai Yu, David Newell* and Yong P. Chen, Synthetic Graphene Grown by Chemical Vapor Deposition on Copper Foils (invited review article), **International Journal of Modern Physics B** 27, 1341002 (2013)
- [J66] Lars Winterfeld, Luis A. Agapito, Jin Li, Nicholas Kioussis, Peter Blaha, and Yong P. Chen, “Strain-induced topological insulator phase transition in HgSe”, **Physical Review B** 87, 075143 (2013)
- [J65] Ajit Vallabhaneni, Bo Qiu, *Jiuning Hu*, Yong P. Chen, Ajit K. Roy, Xiulin Ruan, “Interfacial thermal conductance limit and thermal rectification across vertical carbon nanotube/ graphene nanoribbon-silicon interfaces”, **Journal of Applied Physics** 113, 064311 (2013)
- [J64] *Helin Cao, Suyang Xu, Ireneusz Miotkowski, Jifa Tian, Deepak Pandey, M. Zahid Hasan, Yue Wu*, Yong P. Chen, "Structural and electronic properties of highly doped topological insulator Bi<sub>2</sub>Se<sub>3</sub> crystals", (invited paper in Focus Issue “Topological Insulators - From Materials Design to Reality”, Physica Status Solidi (PSS)), **Rapid Research Letter (RRL)** 7, 133 (2013)
- [J63] *Isaac Childres, Jifa Tian, Ireneusz Miotkowski* and Yong P. Chen, "AFM and Raman studies of topological insulator materials subject to argon plasma etching", **Philosophical Magazine** 93, 681 (2013)
- [J62] *Helin Cao, Rama Venkatasubramanian, Chang Liu, Jonathan Pierce, Haoran Yang, M. Zahid Hasan, Yue Wu*, Yong P. Chen, "Topological insulator Bi<sub>2</sub>Te<sub>3</sub> films synthesized by metal organic chemical vapor deposition", **Applied Physics Letters** 101, 162104 (2012)
- [J61] Naresh K. Emani, *Ting-Fung Chung*, Xingjie Ni, Alexander V. Kildishev, Yong P. Chen, and Alexandra Boltasseva, “Electrically Tunable Damping of Plasmonic Resonances with Graphene”, **Nano Letters** 12, 5202 (2012)
- [J60] Seokmin Hong, Vinh Diep, Supriyo Datta, and Yong P. Chen, “Modeling potentiometric measurements in topological insulators including parallel channels”, **Physical Review B (Rapid Communications)** 86, 085131 (2012)
- [J59] Ji Li, *T-F. Chung*, Yong P. Chen, Gary Cheng, “Nanoscale Strainability of Graphene by Laser Shock Induced 3D Shaping”, **Nano Letters** 12, 4577 (2012)
- [J58] *Jifa Tian, Helin Cao, Wei Wu, Qingkai Yu, Nathan P. Guisinger* and Yong P. Chen, "Graphene Induced Surface Reconstruction of Cu", **Nano Letters** 12, 3893 (2012)

- [J57] Genqiang Zhang, Haiyu Fang, Haoran Yang, *Luis A. Jauregui*, Yong P. Chen and Yue Wu, “Design Principle of Telluride-based Nanowire Heterostructures for Potential Thermoelectric Applications”, **Nano Letters** 12, 3627 (2012)
- [J56] M. Hajlaoui, E. Papalazarou, J. Mauchain, G. Lantz, N. Moisan, D. Boschetto, Z. Jiang, I. Miotkowski, Y. P. Chen, A. Taleb-Ibrahimi, L. Perfetti, and M. Marsi, “Ultrafast Surface Carrier Dynamics in the Topological Insulator Bi<sub>2</sub>Te<sub>3</sub>”, **Nano Letters** 12, 3532 (2012)
- [J55] K.G.S.H. Gunawardana, Kieran Mullen, *Jiuning Hu*, Yong P. Chen, Xiulin Ruan, “Tunable Thermal Transport and thermal rectification in Strained Graphene Nanoribbons”, **Physical Review B** 85, 245417 (2012)
- [J54] *Helin Cao*, *Jifa Tian*, Ireneusz Mitkowski, *Tian Shen*, *Jiuning Hu*, Qiao Shan and Yong P. Chen, “Quantized Hall effect and Shubnikov--de Haas oscillations in highly doped Bi<sub>2</sub>Se<sub>3</sub>: Evidence for layered transport of bulk carriers”, **Physical Review Letters** 108, 216803 (2012)
- [J53] Zhihai Wang, Yong P. Chen, Han Zhu, L.W. Engel, D.C. Tsui, E. Tutuc, M. Shayegan, “Unequal Layer Densities in Bilayer Wigner Crystal at High Magnetic Field”, **Physical Review B** 85, 195408 (2012)
- [J52] Mike Foxe, *Gabriel Lopez*, *Isaac Childres*, *Romaneh Jalilian*, Caleb Roecker, John Boguski, Igor Jovanovic and Yong P. Chen, “Detection of Ionizing Radiation Using Graphene Field Effect Transistors”, **IEEE Transactions on Nanotechnology** 11, 581 (2012)
- [J51] *Sourav Dutta*, Daniel S. Elliott and Yong P. Chen, “Mode-hop-free tuning over 140 GHz of non-AR coated extended cavity diode lasers”, **Applied Physics B: Lasers and Optics** 106, 629-633 (2012)
- [J50] Y. Kim, X. Chen, Z. Wang, J. Shi, I. Miotkowski, Y.P. Chen, P.A. Sharma, A.L. Lima Sharma, M.A. Hekmaty, Z. Jiang, and D. Smirnov, “Temperature dependence of Raman-active optical phonons in Bi<sub>2</sub>Se<sub>3</sub> and Sb<sub>2</sub>Te<sub>3</sub>”, **Applied Physics Letters** 100, 071907 (2012)
- [J49] Haoran Yang, *Luis A. Jauregui*, Genqiang Zhang, Yong P. Chen, Yue Wu, “Non-Toxic and Abundant Copper Zinc Tin Sulfide Nanocrystals for Potential High Temperature Thermoelectric Energy Harvesting”, **Nano Letters** 12, 540 (2012)
- [J48] Genqiang Zhang, Benjamin Kirk, *Luis A. Jauregui*, Xianfan Xu, Yong P. Chen, Yue Wu, “Rational Synthesis of Ultrathin Bi<sub>0.36</sub>Te<sub>0.64</sub> Nanowires with Enhanced Thermoelectric Properties”, **Nano Letters** 12, 56 (2012)
- [J47] X. Chen, H.D. Zhou, A. Kiswandhi, I. Miotkowski, Y.P. Chen, P.A. Sharma, A.L.

Lima Sharma, M.A. Hekmaty, D. Smirnov, and Z. Jiang, "Thermal expansion coefficients of Bi<sub>2</sub>Se<sub>3</sub> and Sb<sub>2</sub>Te<sub>3</sub> crystals from 10 K to 270 K", **Applied Physics Letters** 99, 261912 (2011)

[J46] *Tian Shen*, Wei Wu, Qingkai Yu, Curt A Richter, Randolph Elmquist, David Newell and Yong P. Chen, "Quantum Hall effect on centimeter scale chemical vapor deposited graphene films", **Applied Physics Letters** 99, 232110 (2011)

[J45] X. Liu, D. J. Smith, J. Fan, Y.-H. Zhang, *H. Cao*, Y. P. Chen, J. Leiner, B. J. Kirby, M. Dobrowolska, and J. K. Furdyna, "Structural properties of Bi<sub>2</sub>Te<sub>3</sub> and Bi<sub>2</sub>Se<sub>3</sub> topological insulators grown by molecular beam epitaxy on GaAs(100) substrates", **Applied Physics Letters** 99, 171903 (2011)

[J44] *Jiuning Hu*, Ajit Vallabhaneni, Yang Wang, Xiulin Ruan, and Yong P. Chen, "Nonlinear thermal transport in graphene nanoribbons: a molecular dynamics study", **Applied Physics Letters** 99, 113107 (2011)

[J43] Wei Wu, *Luis A. Jauregui*, Zhihua Su, Zhihong Liu, Jiming Bao, Yong P. Chen, Qingkai Yu, "Growth of Single Crystal Graphene Arrays by Locally Controlling Nucleation on Polycrystalline Cu using Chemical Vapor Deposition", **Advanced Materials** 42, 4898 (2011)

[J42] *Jifa Tian*, *Helin Cao*, Wei Wu, Qingkai Yu, Yong P. Chen, "Direct Imaging of Graphene Edges: Atomic Structure and Electronic Scattering", **Nano Letters** 11, 3663 (2011)

[J41] Anton N. Sidorov, Andriy Sherehiy, Ruwantha Jayasinghe, Robert Stallard, Daniel K. Benjamin, Qingkai Yu, *Helin Cao*, Wei Wu, Zhihong Liu, Jiming Bao, Steven S.S. Pei, Yong P. Chen, Zhigang Jiang and Gamini U. Sumanasekera, "Thermoelectric power of CVD grown graphene as surface charge doping indicator", **Applied Physics Letters** 99, 013115 (3 pages) (2011)

[J40] *Sourav Dutta*, Adeel Altaf, Daniel S. Elliott and Yong P. Chen, "Laser spectroscopy of the X <sup>1</sup>Σ<sup>+</sup> and B <sup>1</sup>Π states of LiRb molecules", **Chemical Physics Letters** 511, 7-11 (2011)

[J39] *Romaneh Jalilian*, *Luis A. Jauregui*, *Gabriel Lopez*, *Jifa Tian*, Caleb Roecker, Mehdi M. Yazdanpanah, Robert W. Cohn, Igor Jovanovic, Yong P. Chen, "Scanning Gate Microscopy on Graphene: Charge Inhomogeneity and Extrinsic Doping", **Nanotechnology** 22, 295705 (29 pages) (2011)

[J38] Suprem R. Das, Collin J. Delker, Dmitri Zakharov, Yong P. Chen, Timothy D. Sands and David B. Janes, "Room Temperature Device Performance of Electrodeposited InSb Nanowire Field Effect Transistors", **Applied Physics Letters** 98, 243504 (2011)

[J37] Deepak K. Pandey, *Jack Chung*, G. Prakash, R. Piner, Yong P. Chen, R.

Reifenberger, “Folding and Cracking of Graphene Oxide Sheets upon Deposition”, **Surface Science** **605**, 1669 (2011)

[J36] Jongweon Cho, Li Gao, *Jifa Tian*, *Helin Cao*, Wei Wu, Qingkai Yu, Esmeralda N. Yitamben, Brandon Fisher, Jeffrey R. Guest, Yong P. Chen and Nathan P. Guisinger, “Atomic-Scale Investigation of Graphene Grown on Cu Foil and the Effects of Thermal Annealing”, **ACS Nano** **5**, 3607 (2011)

[J35] Qingkai Yu\*, *Luis A. Jauregui\**, Wei Wu, Robert Colby, *Jifa Tian*, Zhihua Su, *Helin Cao*, Zhihong Liu, Deepak Pandey, Dongguang Wei, *Jack Chung*, Peng Peng, Nathan Guisinger, Eric A. Stach, Jimin Bao, Shin-shem Pei, Yong P. Chen (\*equal contribution), “Control and characterization of individual grains and grain boundaries in graphene grown by chemical vapour deposition” (Cover Article), **Nature Materials** **10**, 443 (2011)

[J34] *Isaac Childres*, *Luis A. Jauregui*, *Jifa Tian*, Yong P. Chen, “Effect of oxygen plasma etching on graphene studied with Raman spectroscopy and electronic transport” (invited paper for special issue on “Chemically Modified Graphene”), **New Journal of Physics** **13**, 025008 (2011)

[J33] Jingbo Qi, Xunchi Chen, Wenlong Yu, Paul Cadden-Zimansky, Dmitry Smirnov, Norman H. Tolk, Ireneusz Miotkowski, *Helin Cao*, Yong P. Chen, Yizheng Wu, Shan Qiao, Zhigang Jiang, “Ultrafast carrier and phonon dynamics in Bi<sub>2</sub>Se<sub>3</sub> crystals”, **Applied Physics Letters** **97**, 182102 (2010)

[J32] *Isaac Childres*, *Luis A. Jauregui*, Michael Foxe, *Jifa Tian*, Romaneh Jalilian, Igor Jovanovic, Yong P. Chen, “Effect of Electron-beam Irradiation on Graphene Field Effect Devices”, **Applied Physics Letters** **97**, 173109 (2010)

[J31] *Jiuning Hu*, *Stephen Schiffli* [*undergraduate student*], Ajit Vallabhaneni, Xiulin Ruan and Yong P. Chen, “Tuning the thermal conductivity of graphene nanoribbons by edge passivation and isotope engineering: a molecular dynamics study”, **Applied Physics Letters** **97**, 133107 (2010)

[J30] Yong P. Chen and Qingkai Yu, “Graphene rolls off the press” (News & Views), **Nature Nanotechnology** **5**, 559 (2010)

[J29] Han Zhu, Yong P. Chen, P. Jiang, L. W. Engel, D.C. Tsui, L.N. Pfeiffer, and K.W. West, “Observation of pinning mode in Wigner solid of 1/3 fractional quantum Hall excitations”, **Physical Review Letters** **105**, 126803 (2010)

[J28] Wei Wu, Zhihong Liu, *Luis A. Jauregui*, Qingkai Yu, Jiming Bao, Rajeev Pillai, *Helin Cao*, Yong P. Chen, Shin-Shem Pei, “Wafer-scale Synthesis of Graphene by Chemical Vapor Deposition and its Application in Gas Sensing”, **Sensors and Actuators B** **150**, 296 (2010)



[J27] *Jifa Tian*, L. A. Jauregui, G. Lopez, *H. Cao*, and Y. P. Chen, “Ambipolar Graphene Field Effect Transistors by Local Metal Side Gates”, **Applied Physics Letters** **96**, 263110 (2010)

[J26] Han Zhu, G. Sambandamurthy, Yong P. Chen, P. Jiang, L. W. Engel, D.C. Tsui, L.N. Pfeiffer, and K.W. West, “Pinning-Mode Resonance of a Skyrmie Crystal near Landau-Level Filling Factor  $\nu = 1$ ”, **Physical Review Letters** **104**, 226801 (2010)

[J25] Qi Wei, Sabre Kais and Yong P. Chen, “Entanglement Switch for Dipole Arrays”, **Journal of Chemical Physics** **132**, 121104 (2010)

[J24] *Helin Cao*, Qingkai Yu, *Luis A. Jauregui*, *Jifa Tian*, Wei Wu, Zhihong Liu, *Romaneh Jalilian*, Daniel K. Benjamin, Zhigang Jiang, Jiming Bao, Steven S. Pei and Yong P. Chen, “Electronic Transport in Chemical Vapor Deposited Graphene Synthesized on Cu: Quantum Hall Effect and Weak Localization”, **Applied Physics Letters** **96**, 122106 (2010)

[J23] *Helin Cao*, Qingkai Yu, Deepak Pandey, Dima Zemlianov, Robert Colby, *Isaac Childres*, Vladimir Drachev, Eric Stach, Jie Lian, Hao Li, Steven S. Pei and Yong P. Chen, “Large-scale Graphitic Thin Films Synthesized on Ni and Transferred to Insulators: Structural and Electronic Properties”, **Journal of Applied Physics** **107**, 044310 (2010)

[J22] L. Zhang, J. Camacho, *H. Cao*, Y. P. Chen, M. Khodas, D. Kharzeev, A. Tsvetik, T. Valla and I. A. Zaliznyak, “Breakdown of the  $N=0$  Quantum Hall State in graphene: two insulating regimes”, **Physical Review B, Rapid Communications** **80**, 241412 (2009)

[J21] *Jiuning Hu*, Xiulin Ruan and Yong P. Chen, “Thermal Conductivity and Thermal Rectification in Graphene Nanoribbons: a Molecular Dynamics Study”, **Nano Letters** **9**, 2730 (2009)

[J20] S. E. Pollack, D. Dries, M. Junker, Y.P. Chen, T. Corcovilos and R.G. Hulet, “Extreme tunability of interactions in a Li-7 Bose-Einstein condensate”, **Physical Review Letters** **102**, 090402 (2009)

[J19] S. Pankavich, Z. Shreif, Y.P. Chen and P. Ortoleva, “Multiscale Theory of Finite Size Bose Systems: Implications for Collective and Single-Particle Excitations”, **Physical Review A** **79**, 013628 (2009)

[J18] Xuefeng Wang, Yong P. Chen and David Nolte, “Strong anomalous optical dispersion of graphene: complex refractive index measured by picometrology”, **Optics Express** **16**, 22105 (2008)

[J17] Qingkai Yu, Jie Lian, Sujitra Siripongert, Hao Li, Yong P. Chen, and Shin-Shem Pei, “Graphene segregated on Ni surface and transferred to insulators”, **Applied Physics Letters** **93**, 113103 (2008)

[J16] Lishan Weng, *Liyuan Zhang*, Yong P. Chen, and Leonid P. Rokhinson, “Atomic force microscope local oxidation nanolithography of graphene”, **Applied Physics Letters** 93, 093107 (2008)

[J15] M. Junker, D. Dries, C. Welford, J. Hitchcock, Yong P. Chen and R. G. Hulet, “Photoassociation of a Bose-Einstein condensate near a Feshbach resonance”, **Physical Review Letters** 101, 060406 (2008)

[J14] G. Sambandamurthy, R. M. Lewis, H. Zhu, Yong P. Chen, L. W. Engel, D. C. Tsui, L. N. Pfeiffer and K. W. West, “Observation of pinning mode of stripe phases of 2D systems in high Landau levels”, **Physical Review Letters** 100, 256801 (2008)

[J13] Yong P. Chen, J. Hitchcock, D. Dries, M. Junker, C. Welford and R. G. Hulet, “Phase coherence and superfluid-insulator transition in a disordered Bose-Einstein condensate”, **Physical Review A** 77, 033632 (2008)

[J12] Z. H. Wang, Yong P. Chen, L. W. Engel, D. C. Tsui, E. Tutuc and M. Shayegan, “Pinning modes and interlayer correlation in high magnetic field bilayer Wigner solids”, **Physical Review Letters** 99, 136804 (2007)

[J11] Yong P. Chen, G. Sambandamurthy, Z. H. Wang, R. M. Lewis, L. W. Engel, D. C. Tsui, P. D. Ye, L. N. Pfeiffer, and K. W. West, “Melting of a 2D Quantum Electron Solid in High Magnetic Field”, **Nature Physics** 2, 452 (2006).

[J10] Yong P. Chen, “Pinned Bilayer Wigner Crystals with Pseudospin Magnetism”, **Physical Review B** 73, 115314 (2006).

[J9] E. Diez, Y. P. Chen, S. Avesque, M. Hilke, E. Peled, D. Shahar, J. M. Cerveró, D. L. Sivco and A. Y. Cho, “Two Dimensional Electron Gas in InGaAs/InAlAs quantum wells”, **Applied Physics Letters** 88, 052107 (2006).

[J8] R. M. Lewis, Yong P. Chen, L. W. Engel, D. C. Tsui, L. N. Pfeiffer, and K. W. West, “Microwave resonance of the reentrant insulating quantum Hall phases in the 1st excited Landau Level”, **Physical Review B, Rapid Communications** 71, 081301(R) (2005).

[J7] Yong P. Chen, R. M. Lewis, L. W. Engel, D. C. Tsui, P. D. Ye, Z. H. Wang, L. N. Pfeiffer, and K. W. West, “Evidence for Two Different Solid Phases of Two Dimensional Electrons in High Magnetic Fields”, **Physical Review Letters** 93, 206805 (2004).

[J6] R. M. Lewis, Yong P. Chen, L. W. Engel, D. C. Tsui, P. D. Ye, L. N. Pfeiffer, and K. W. West, “Evidence of a First Order Phase Transition Between the Wigner Crystal and Bubble Phases of 2D Electrons in Higher Landau Levels”, **Physical Review Letters** 93, 176808 (2004).

[J5] E. Peled, Y. Chen, E. Diez, D. C. Tsui, D. Shahar, D. L. Sivco, and A. Y. Cho,

“Symmetries of the Resistance of Mesoscopic Samples in the Quantum Hall Regime”, **Physical Review B**, Rapid Communications 69, 241305(R) (2004).

[J4] E. Peled, D. Shahar, Y. Chen, E. Diez, D. L. Sivco, and A. Y. Cho, “Near Perfect Correlation of the Resistance Components of Mesoscopic Samples at the Quantum Hall Regime”, **Physical Review Letters** 91, 236802 (2003).

[J3] Yong Chen, R. M. Lewis, L. W. Engel, D. C. Tsui, P. D. Ye, L. N. Pfeiffer, and K. W. West, “Microwave Resonance of the 2D Wigner Crystal Around Integer Landau Fillings”, **Physical Review Letters** 91, 016801 (2003).

[J2] E. Peled, D. Shahar, Y. Chen, D. L. Sivco, and A. Y. Cho, “The Quantized Hall Effect in the Presence of Resistance Fluctuations”, **Physical Review Letters** 90, 246802 (2003).

[J1] Chen, Yong, “Structures of Non-Hausdorff Linear Topological Spaces”, **Journal of Xi’an Jiaotong University**, 29, No. 10, 114 (1995).

#### **Refereed Conference Publications:**

[C42] Hiroshi Idzuchi, Andres E. Llacsahuanga Allica, Amanda Victo Haglund, Xing-Chen Pan, Takuya Matsuda, Katsumi Tanigaki, David Mandrus, and Yong P. Chen, "On the Optical Properties of Cr<sub>2</sub>Ge<sub>2</sub>Te<sub>6</sub> and Its Heterostructure", Proc. International Conference on Quantum Materials and Technologies, published in **Condens. Matter** 8, 59 (2023)

[C41] Andres E. Llacsahuanga Allica, H. Idzuchi, X. C. Pan, K. Tanigaki, and Y. P. Chen, "Modified magnetism in heterostructures of Cr<sub>2</sub>Ge<sub>2</sub>Te<sub>6</sub> and oxides", Proc. 67th Annual Conference on Magnetism and Magnetic Materials, (MMM 2022), Minneapolis, USA, October 31- November 4, 2022, published in **AIP Advances** 13, 015031 (2023)

[C40] H. Idzuchi, S. Iihama, M. Shimura, A. Kumatani, S. Mizukami, and Y. P. Chen, "Spin injection characteristics of Py/graphene/Pt by gigahertz and terahertz magnetization dynamics driven by femtosecond laser pulse", **AIP Advance** 11, 015321 (2021)

[C39] Xiangyu Li, Wonjun Park, Yong P. Chen and Xiulin Ruan, "Effect of Particle Size and Aggregation on Thermal Conductivity of Metal-Polymer Nanocomposite", Proc. ASME 2016 Heat Transfer Summer Conference, No. HT2016-7413, pp. V001T04A005 (2016) doi:10.1115/HT2016-7413

[C38] Xiangyu Li, Wonjun Park, Yong P. Chen and Xiulin Ruan, "Thermal Interfacial Resistance Reduction Between Metal and Dielectric Materials by Inserting Intermediate Metal Layer", Proc. ASME 2016 Heat Transfer Summer Conference, No. HT2016-7414, pp. V001T04A006 (2016) doi:10.1115/HT2016-7414

- [C37] Jieran Fang, Di Wang, Clayton DeVault, Ting-Fung Chung, Yong Chen, Alexandra Boltasseva, Vladimir M. Shalaev, and Alex Kildishev, "Enhanced Graphene Photodetector with Fractal Metasurface", **CLEO-2016**, OSA Technical Digest, paper FF1B.4. (2016) doi: 10.1364/CLEO\_QELS.2016.FF1B.4
- [C36] SM Hus, C Durand, XG Zhang, C Ma, MA McGuire, Y Xu, H Cao, I. Miotkowski, Y.P.Chen, A-P. Li, "Differentiation of Surface and Bulk Conductivities via Four-probe Spectroscopy", **Proc. Microscopy and Microanalysis 2016** (Columbus, Ohio), published in **Microscopy and Microanalysis 22** (S3), 384-385 (2016)
- [C35] Luis A. Jauregui, Michael Pettes, Li Shi and Yong P. Chen, "Topological surface state transport and current saturation in topological insulator nanoribbons field effect transistors", **Proc. 72nd Device Research Conference** (DRC-2015, Santa Barbara, CA), p. 167-168 (2015) doi: 10.1109/DRC.2014.6872350
- [C34] Morteza Kayyalha and Yong P. Chen, "Gate-Tunable MoS<sub>2</sub>-based thermoelectric devices", **Proc. 72nd Device Research Conference** (DRC-2015, Santa Barbara, CA), p. 101-102 (2015)
- [C33] Igor Jovanovic, Edward Cazalas, Isaac Childres, Amol Patil, Ozhan Koybasi, and Yong P. Chen, "Graphene field effect transistor-based detectors for detection of ionizing radiation", **Proc. of 3rd International Conference on the Advancements in Nuclear Instrumentation Measurement Methods and their Applications (ANIMMA)**, Marseille, France (2013) DOI:10.1109/ANIMMA.2013.6727932
- [C32] Zhe Luo, Han Liu, Yanhui Feng, Peide Ye, Yong P. Chen and Xianfan Xu, "In-Plane Thermal Conductivity of Ultra-Thin Al<sub>2</sub>O<sub>3</sub> Films Measured by Micro-Raman", **Proceedings of the ASME 2013 Heat Transfer Summer Conference** (HT2013), Volume 1: Heat Transfer in Energy Systems; Thermophysical Properties; Theory and Fundamental Research in Heat Transfer (2013), doi:10.1115/HT2013-17170
- [C31] Yang Xu, Helin Cao, Ireneusz Miotkowski, Yong P. Chen, "Thermoelectric transport in topological insulator Bi<sub>2</sub>Te<sub>2</sub>Se bulk crystals", **MRS Proceedings** 1543 (2013) DOI: 10.1557/opl.2013.938
- [C30] Jiuning Hu, Wonjun Park, Xiulin Ruan and Yong P. Chen, "Thermal transport in graphene and graphene-based composites" (invited), **ECS Transactions** 53, 1, 41 (2013)
- [C29] Jiuning Hu, Wonjun Park, Xiulin Ruan and Yong P. Chen, "Thermal Conductivity Measurement of Graphene Composite", 2012 MRS Spring Meeting, Symposium JJ – Nanoscale Thermoelectrics 2012--Materials and Transport Phenomena, **MRS Proceedings** 1456 (2013) doi:0.1557/opl.2013.532
- [C28] Jiuning Hu, Xiulin Ruan and Yong P. Chen, "Molecular Dynamics Study of Thermal Rectification in Graphene Nanoribbons", 2009 NIST 17th Symposium, Boulder Co (2009), published in **International Journal of Thermophysics** 33, 986 (2012)

[C27] Ozhan Koybasi, Isaac Childres, Igor Jovanovic and Yong P. Chen, “Graphene field effect transistor as a radiation and photodetector” (invited paper), **2012 Defense Science Symposium (DSS)**, Proc. SPIE 8373, 83730H (2012)

[C26] Yong P. Chen, “Topological insulator based energy efficient devices” (invited paper), **2012 Defense Science Symposium (DSS)**, Proc. SPIE 8373, 83730B (2012)

[C25] X. Liu, D. J. Smith, J. Fan, Y.-H. Zhang, H. Cao, Y. P. Chen, J. Leiner, B. J. Kirby, M. Dobrowolska, and J. K. Furdyna, “Characterization of Bi<sub>2</sub>Te<sub>3</sub> and Bi<sub>2</sub>Se<sub>3</sub> topological insulators grown by MBE on (001) GaAs substrates”, 28<sup>th</sup> North American MBE conference (NAMBE), **Journal of Vacuum Science and Technology B 30**, 02B103 (2012)

[C24] Luis A. Jauregui, Helin Cao, Wei Wu, Qingkai Yu, and Yong P. Chen, “Electronic properties of grains and grainboundaries in graphene grown by chemical vapor deposition”, Proc. Graphene Week 2010, **Solid State Communications 151**, 1100-1104 (2011)

[C23] Isaac Childres, Michael Foxe, Igor Jovanovic, Yong P. Chen, “Effect of energetic electron irradiation on graphene and graphene field-effect transistors” (invited paper), Proc. SPIE 8031, 803122 (2011)

[C22] Ajit K. Vallabhaneni, Jiuning Hu, Yong P. Chen, Xiulin Ruan, “Thermal rectification in graphene and carbon nanotube systems using molecular dynamics simulations”, Proc. ASME/JSME 2011 8th Thermal Engineering Joint Conference, AJTEC2011-44521, T30060-T30060-7 (2011)

[C21] Luis A. Jauregui, Yanan Yue, Anton N. Sidorov, Jiuning Hu, Qingkai Yu, Gabriel Lopez, Romaneh Jalilian, Daniel K. Benjamin, Derek A. Delk, Wei Wu, Zhihong Liu, Xinwei Wang, Zhigang Jiang, Xiulin Ruan, Jiming Bao, Steven S. Pei, Yong P. Chen, “Thermal Transport in Graphene Nanostructures: Experiments and Simulations”, 217th Electrochemical Society (ECS) Meeting (invited paper), **ECS Transactions 28(5)**, 73 (2010)

[C20] Robert Colby, Qingkai Yu, Helin Cao, Steven S. Pei, Eric A. Stach, Yong P. Chen, “Cross-sectional transmission electron microscopy of thin graphite films grown by chemical vapor deposition”, Proceedings of New Diamond and Nano Carbons (NDNC) Conference (2009), **Diamond and Related Materials, 19**, 143 (2010)

[C19] Luis A. Jauregui, Hao Lu, Jun Lou, Yong P. Chen, “Towards NEMS fluid sensors based on suspended nanomaterials”, MRS Fall Meeting, Boston (2009), **Materials Research Society Symposium Proceedings 1222**, 1222-DD05-31 (2010)

[C18] Helin Cao, Qingkai Yu, Isaac Childres, S.S. Pei, Y.P. Chen, “High Mobility Ambipolar Field Effect Transistors Made from Large-Scale CVD Graphitic Thin Films”,

**Device Research Conference 2009**, 133-134 (2009) DOI:10.1109/DRC.2009.5354876

[C17] Isaac Childres, Romaneh Jalilian, Michael Foxe, Alex Chernyshov, Leonid Rohkinson, Igor Jovanovic, Yong P. Chen, “Effect of Energetic Electron Irradiation on Graphene”, Proc. 10th International Conference on Applications of Nuclear Techniques, **AIP Conference Proceedings** 1194, 140 (2009)

[C16] Jiuning Hu, Xiulin Ruan, Zhigang Jiang and Yong P. Chen, “Molecular Dynamics Calculation of Thermal Conductivity of Graphene Nanoribbons”, Frontiers of Characterization and Metrology for Nanoelectronics 2009, **AIP Conference Proceedings** 1173, 135 (2009)

[C15] G. Sambandamurthy, H. Zhu, Yong P. Chen, L. W. Engel, D. C. Tsui, L. N. Pfeiffer, and K.W. West, “Pinning modes resonances of the stripe phases of 2D systems in high Landau levels”, Proceedings of the 18th International Conference on High Magnetic Fields in Semiconductor Physics and Nanotechnology, Sao Pedro, BRAZIL (2008), **International Journal of Modern Physics B** 23, 2628 (2009)

[C14] Qingkai Yu, Helin Cao, Yong Chen, Jie Lian and Shin-shem Pei, “Characterizations of graphene segregated on Ni”, **Proceedings of NSTI Nanotech 2009** (Houston TX), Vol.1, 308 (2009)

[C13] Deepak Pandey, G. Prakash, Q. Yu, H. Cao, L. A. Jauregui, S. S. Pei and Y. P. Chen, “Surface Microscopy Characterizations of Large Size Graphene films Grown by Surface Segregation on Ni and Transferred to Si/SiO<sub>2</sub> Substrate”, Proc. 215th Electrochemical Society Meeting, H10 “Graphene and Emerging Materials for Post-CMOS Applications”, **ECS Transactions** 19 (5), 75 (2009)

[C12] R.G. Hulet, D. Dries, M. Junker, S. E. Pollack, J. Hitchcock, Y. P. Chen, T. A. Corcovilos and C. Welford, “Tunable Interactions in a Bose-Einstein Condensate of Lithium: Photoassociation and Disorder-Induced Localization”, **Proc. 2008 International Conference on Atomic Physics** (eds. R. Cote *et al.*), 150 (2009)

[C11] Yong P. Chen, J. Hitchcock, D. Dries, S. E. Pollack, T. A. Corcovilos and R. G. Hulet, “Experimental Studies of a Disordered Bose-Einstein Condensate of <sup>7</sup>Li”, Int. Conference “Nonlinear phenomena in quantum degenerate gases” (Nlqugas’08), Toledo, Spain (2008), published as an invited review paper in Special Issue, **Physica D: Nonlinear Phenomena** 15, 1321 (2009)

[C10] Yong P. Chen, G. Sambandamurthy, L. W. Engel, D. C. Tsui, L. N. Pfeiffer, and K. W. West, “Microwave resonance study of melting in high magnetic field Wigner solid”, Proceedings of the 17th International Conference on High Magnetic Fields in Semiconductor Physics, Wurzburg, Germany (2006), **International Journal of Modern Physics B** 21, 1379 (2007).

[C9] L. W. Engel, R.M. Lewis, Y. P. Chen, G. Sambandamurthy, D. C. Tsui, L. N.

Pfeiffer and K. W. West, “Microwave spectroscopy of electron solid and stripe phases in higher Landau levels”, Proceedings of the 16th International Conference on Electronic Properties of Two-Dimensional Systems, Albuquerque, New Mexico (2005), **Physica E: Low Dimensional Systems and Nanostructures** 34, 53 (2006).

[C8] G. Sambandamurthy, Z. H. Wang, R. M. Lewis, Yong P. Chen, L. W. Engel, D. C. Tsui, L. N. Pfeiffer, and K.W. West, “Pinning mode resonances of new phases of 2D electron systems in high magnetic fields” (*invited review paper*), Proceedings of the Workshop “Emergent phenomena in quantum Hall systems” (EPQHS-2005), **Solid State Communications** 140, 100 (2006).

[C7] R.M. Lewis, Y. P. Chen, G. Sambandamurthy, L. W. Engel, D. C. Tsui, L. N. Pfeiffer and K. W. West, “Recent results in microwave and rf spectroscopy of two-dimensional electron solids”, Proceeding of International Workshop on Electronic Crystals, Corsica, France (2005), **Journal de Physique IV** 131, 241 (2005).

[C6] E. Peled, D. Shahar, Y. Chen, E. Diez, D. L. Sivco, and A. Y. Cho, “Quantum Hall transitions in mesoscopic samples”, Proceedings of the 16th International Conference on High Magnetic Fields in Semiconductor Physics, Tallahassee, Florida (2004), **International Journal of Modern Physics B**, 18, 3575 (2004).

[C5] Yong P. Chen, Zhihai Wang, R. M. Lewis, L. W. Engel, D. C. Tsui, P. D. Ye, L. N. Pfeiffer, and K. W. West, “Microwave Resonances in the Reentrant Insulating Phases around  $\nu=1/3$  and  $\nu=1/5$  in Two Dimensional Electron Systems”, Proceedings of the 16th International Conference on High Magnetic Fields in Semiconductor Physics, Tallahassee, Florida (2004), **International Journal of Modern Physics B**, 18, 3553 (2004).

[C4] R. M. Lewis, Yong Chen, L. W. Engel, D. C. Tsui, P. D. Ye, L. N. Pfeiffer, and K. W. West, “Wigner Crystallization about  $\nu=3$ ”, Proceedings of the 15th International Conference on Electronic Properties of Two Dimensional Systems, Nara, Japan (2003), **Physica E: Low Dimensional Systems and Nanostructures** 22, 104 (2004).

[C3] R. M. Lewis, Yong Chen, L. W. Engel, D. C. Tsui, P. D. Ye, L. N. Pfeiffer, and K. W. West, “Measurements of the Temperature Dependence of the Bubble Phase”, Proceedings of the 15<sup>th</sup> International Conference on Electronic Properties of Two Dimensional Systems, Nara, Japan (2003), **Physica E: Low Dimensional Systems and Nanostructures** 22, 119 (2004).

[C2] P. D. Ye, Yong Chen, L. W. Engel, D. C. Tsui, R. M. Lewis, L. N. Pfeiffer, and K. W. West, “Domain Size vs Landau Filling for High Magnetic Field Wigner Crystal”, **Proceedings of the 15<sup>th</sup> International Conference on High Magnetic Fields in Semiconductor Physics**, Oxford, England (2002).

[C1] Yong Chen and Jacob White, “A Quadratic Method for Nonlinear Model Order Reduction”, **Proceedings of the 3rd International Conference on Modeling and**

**Simulation of Microsystems, Semiconductors, Sensors and Actuators**, San Diego, California (2000)

**Book Chapters:**

[BC5] Yang Xu and Yong P. Chen, "Quantum transport study in three-dimensional topological insulator BiSbTeSe<sub>2</sub>", Chap. 3 in "*Topological Insulator and Related Topics*" (ed. Lu Li, Kai Sun), **Semiconductors and Semimetals** 108 , 73-124 (2021)

[BC4] Morteza Kayyalha, Leonid P. Rokhinson and Yong P. Chen, "Electrical and superconducting transport in topological insulator nanoribbons", a review article, as Chapter 7 of "Semiconductor Nanodevices: Physics, Technology and Applications" (Ed. David A. Ritchie), published in **Frontiers of Nanoscience** 20, 241-264 (2021)

[BC3] Xinyu Liu, Y. P. Chen, D. J. Smith, Y.-H. Zhang, C. Liu, M. Z. Hasan, M. Dobrowolska, J. K. Furdyna, J. Fan, H. Cao, T.-L. Wu, and R. E. Pimpinella, "MBE growth of thin hexagonal films Bi<sub>2</sub>Te<sub>3</sub>, Bi<sub>2</sub>Se<sub>3</sub>, and their alloys on cubic GaAs (001) substrates", Chapter 11 in "Bismuth-Containing Compounds", ed. Zhiming Wang, in Springer Series in Materials Sciences (2012)

[BC2] Isaac Childres, Luis A. Jauregui, Yong P. Chen, "Raman spectroscopy of graphene and related materials" (invited), Chapter in "New Developments in Photon and Materials Research", ed. Joon Jang, Science Nova Publishers (2012)

[BC1] Romaneh Jalilian, Luis A. Jauregui, Kyuwan Lee, Yong P. Chen, Joseph Irudayaraj, "Graphene for Biosensing Applications", in "Biomedical Nanosensors", ed. Joseph Irudayaraj, Pan Stanford Publishing (2012)

**arXiv preprints** (not yet published):

[] Rafał Recheński, Aleksei Khindanov, Dmitry I. Pikulin, Jian Liao, Leonid P. Rokhinson, Yong P. Chen, Roman M. Lutchyn, Jukka I. Väyrynen, "Influence of disorder on antidot vortex Majorana states in 3D topological insulators", arXiv:2310.03810

[] Hiroshi Idzuchi, Andres E Llacsahuanga Allica, Anh Khoa Augustin Lu, Mitsuhiro Saito, Michel Houssa, Ruishen Meng, Kazutoshi Inoue, Xing-Chen Pan, Katsumi Tanigaki, Yuichi Ikuhara, Takeshi Nakanishi, Yong P Chen, "Enhanced ferromagnetism in artificially stretched lattice in quasi two-dimensional Cr<sub>2</sub>Ge<sub>2</sub>Te<sub>6</sub>", arXiv:2306.08962

[] Jinlei Zhang, Jiayong Zhang, Yaping Qi, Shuainan Gong, Run Zhao, Hongbin Yang, Zhenping Wu, Dapeng Cui, Lin Wang, Chunlan Ma, Ju Gao, Yong P. Chen, Yucheng Jiang, Observation of room-temperature ferroelectricity in elemental Te nanowires, arXiv:2211.04066



[] Riku Tataka, Alka Sharma, Tomoya Johmen, Takeshi Kumasaka, Motoya Shinozaki, Yong P. Chen, Tomohiro Otsuka, Formation of quantum dots in MoS<sub>2</sub> with cryogenic Bi contacts and intrinsic Schottky barriers, arXiv:2210.11897

[] H. Idzuchi, M. Kimata, S. Okamoto, P. Laurell, N. Mohanta, M. Cothrine, S. E. Nagler, D. Mandrus, A. Banerjee, Y. P. Chen, "Spin sensitive transport in a spin liquid material: revealing a robustness of spin anisotropy", arxiv:2204.03158

[] Jifa Tian, Ting-Fung Chung, Ireneusz Miotkowski, and Yong P. Chen, "Electrical spin injection into graphene from a topological insulator in a van der Waals heterostructure", arXiv:1607.02651

[] W. Yu, X. Chen, Z. Jiang, I. Miotkowski, H. Cao, Y. P. Chen, D. Smirnov, L.-C. Tung, "Magneto-Infrared Study of Topological Insulator Bi<sub>2</sub>Se<sub>3</sub>", arxiv:1508.04363

[] Biddut K. Sarker, Isaac Childres, Edward Cazalas, Igor Jovanovic, Yong P. Chen, "Gate-tunable and high responsivity graphene phototransistors on undoped semiconductor substrates", arXiv:1409.5725

[] Helin Cao, Chang Liu, Jifa Tian, Yang Xu, Ireneusz Miotkowski, M. Zahid Hasan, Yong P. Chen, "Controlling and distinguishing electronic transport of topological and trivial surface states in a topological insulator", arXiv:1409.3217

## **Patents**

Vladimir M. Shalaev, Pramey Upadhyaya, Abhishek Bharatbhai Solanki, Simeon I. Bogdanov, Yong P. Chen, Mohammad Mushfiqur Rahman, Avinash Rustagi, Nanodevice, "method of making the same, and method of using the same" (a patent on a nanodevice that includes a ferroelectric substrate, a ferromagnetic material, and a nanodiamond including nitrogen-vacancy (NV) spins to sense electric fields), US Patent number 11802921 (2023) <https://patents.justia.com/patent/11802921>

Yong Chen, "Surface Excitonic Thermoelectric Devices", US Patent (Pending), Publication No. US 2012/0138115 (2012):  
<http://www.google.com/patents/US20120138115>

### **Provisional Patent Filed:**

"Epitaxial Synthesis of Graphene on Sapphire Using Chemical Vapor Deposition", with Hao Li (University of Missouri) and Qingkai Yu (University of Houston) (03/2008)

## **Media Interviews/Reports/News Story on Research** (selected)

Work on 2D electron Wigner crystal featured in *Bell-labs cond-mat journal club*, May 2006

“Bendy gadget future for graphene,” short feature on the *One-Minute World News*, BBC, January 14, 2009.

Work on CVD graphene featured in the *News and Views* story in *Nature Nanotechnology*, April 2009.

Work on graphene growth mentioned in the feature story “Graphene production goes industrial,” *Physics Today*, August 2010, as well as in *Nobel Lecture* on Graphene, December, 2010.

Work on quantum Hall effect in CVD graphene featured on NanotechWeb etc. 2010

Work featured as the cover image of *Nature Materials*, June 2011, and in a *News and Views* article “Pushing the boundaries,” by P. M. Ajayan and B. I. Yakobson in the same issue.

Work on nonlinear thermal transport in graphene selected as *Research Highlights* in *Nature Nanotechnology*, October 2011

Work on nano-machining of graphene mentioned in a “*News from Field*” on *National Science Foundation* (NSF) Website, August 2012

Work on graphene based thermal interface materials selected in “*Industry-Nominated Technology Breakthroughs of NSF Industry/University Cooperative Research Centers*” 2012

Work on cold molecules reported on Purdue News, Science Daily, Physorg etc., 2014

Work on topological insulators reported on Purdue News, Science Daily, Physorg etc. and Nanotechweb, 2014

Work on topological insulator nanoribbons reported on Purdue News etc. Jan. 2016

Interviewed in a PNAS feature article on topological insulator “Core Concept: Topological insulators promise computing advances, insights into matter itself”, *Proc. Nat. Acad. Sci.* 113, 10223 (2016)

NSF EFRI grant reported by APS News “APS Members Awarded Funding to Break the Boundaries of Classical Physics”

(<https://www.aps.org/publications/apsnews/updates/efri-newlaw.cfm>) and NSF press release “NSF wants engineering researchers to bend rules (of classical physics)”

([https://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=189493&WT.mc\\_id=USNSF\\_51&WT.mc\\_ev=click](https://www.nsf.gov/news/news_summ.jsp?cntn_id=189493&WT.mc_id=USNSF_51&WT.mc_ev=click))

Work on graphene photodetectors enhanced by fractal golden 'snowflake' reported on Phys.Org etc., Jan. 2017, and featured on the cover of Feb. 2017 Issue of APS News (<https://www.aps.org/publications/apsnews/201702/research-news.cfm>)

Work on graphene phototransistors reported on *IEEE Spectrum*, Purdue News, phys.org etc. Apr. 2017

Work on spin battery reported on Purdue News, phys.org, nextbigfuture.com etc. Apr.2017

Work on topological insulator surface state thermal transport reported on Purdue news, phys.org etc. Mar. 2018

Work on quantum fluid colliders and bosonic spin current reported on Purdue news, phys.org etc. Jan. 2019

Work on topological insulator Josephson junctions reported on Purdue news, phys.org etc., Feb. 2019

Work on synthetic Hall cylinder (quantum matter in curved space) reported on Purdue news, phys.org etc., Feb 2022

Interviewed in a *Foreign Policy* article “The Quantum Chips Are Stacking Up”, Foreign Policy: <https://foreignpolicy.com/2023/10/04/quantum-computing-policy-qubits-timeline/>

**Selected current/recent research collaborators (co-authors)**

<b>Collaborator</b>	<b>Institution [Department]</b>	<b>Area of Collaboration</b>
Arnab Banerjee	Purdue [Physics]	Quantum spin liquid
Alexandra Boltasseva	Purdue [ECE]	Plasmonics/nanophotonics
Rudro Biswas	Purdue [Physics]	Condensed matter theory
Gary Cheng	Purdue [Industrial Engineering]	Nanomaterials/fabrication
Haiping Cheng	Univ. of Florida [Physics]	Materials/device modeling
Supriyo Datta	Purdue [ECE]	Spin transport/device modeling
Dan Elliott	Purdue [ECE]	Coherent control; Molecules/atomic physics
Chris Greene	Purdue [Physics]	AMO/few-body physics theory
Nathan Guisinger	Argonne National Lab.	Scanning tunneling microscopy (STM)
M. Zahid Hasan	Princeton Univ. [Physics]	ARPES (angle resolved photoemission spectr.)
Rui He	Univ. Northern Iowa [Physics]	Raman spectroscopy
Han Htoon	Los Alamos National Lab	Optical measurements of 2D

		materials, quantum emitters
Philip Hofmann	Aarhus University [Physics]	ARPES
Libai Huang	Purdue [Chemistry]	Ultrafast/pump-probe measurements
Yucheng Jiang	Suzhou Sci. Tech. Univ.	Nanomaterials
Igor Jovanovic	Univ. Michigan [Nuclear Eng.]	Radiation detection
Sabre Kais	Purdue [Chem]	Quantum computing
Alexander Kildishev	Purdue [ECE]	Nanophotonics/modeling
An-ping Li	Oak Ridge National Lab	Scanning probe
Tong-cang Li	Purdue Univ. [Physics/ECE]	Color centers, quantum photonics
Yuli Lyanda-Geller	Purdue [Physics]	Condensed matter theory
David Mandrus	Univ. Tennessee [Materials Sci.]	Quantum materials crystals
Zhiqiang Mao	Penn State Univ. [Physics]	Quantum materials crystals
Robert McDermott	Univ. Wisconsin [Physics]	Superconductor devices
Shigemi Mizukami	Tohoku University [AIMR]	Spintronics/magnetics
David Newell	NIST	Metrology/graphene
Chunlei Qu	Stevens Institute of Technology	Cold atoms physics theory
Leonid Rokhinson	Purdue [Physics]	Low temperature transport; nano/Josephson devices
Vladmir Shalaev	Purdue [ECE]	Plasmonics/nanophotonics
Chih-Kang Shih	Univ. Texas Austin [Physics]	STM
Katsumi Tanigaki	Tohoku Univ. [Physics/AIMR]	Quantum materials
Takashi Taniguchi	NIMS, Japan	h-BN (boron nitride)
Pramey Upadhyaya	Purdue [ECE]	Spintronics theory
Søren Ulstrup	Aarhus Univ. [Phys]	(nano/micro)ARPES
Xianfan Xu	Purdue [Mechanical Eng.]	Thermal transport/optical measurements
Qi-kun Xue & Xu-cun Ma	Tsinghua Univ. [Physics]	MBE/topological insulators
Chuan-wei Zhang	Univ. Texas at Dallas [Physics]	Cold atoms physics theory
Qi Zhou	Purdue [Physics]	Cold atoms physics theory

## **Presentations**

### **Invited Conferences Talks:**

[150] “Topological Superconductors: from materials/physics to devices”, Quantum Science Center Device Workshop, online (01/17/2024)

[149] “2D/topological quantum materials, heterostructures and devices: towards in-operando microscopy and spectroscopy”, ARPES@ASTRID Workshop, Aarhus University, Denmark, 12-12-2023

[148] “Multimodal characterizations of 2D/topological quantum materials and devices: towards in-operando microscopy and spectroscopy”, The 13<sup>th</sup> International Conference on Advanced Materials and Devices (ICAMD) 2023- Session “Recent Progress in Extreme Quantum Matter and Functionality”, Jeju Island, Korea (12/05/2023)

[147] “Quantum Materials meets Spintronics”, The 7<sup>th</sup> Symposium for Core Research Clusters for Materials Science and Spintronics, Tohoku University, Sendai, Japan (11/29/2023)

[146] Advanced Institute for Materials Research (AIMR) Workshop, Tohoku University, Sendai, Japan (11/27/2023)

[145] “Van der Waals Magnets and Heterostructures: platforms to realize and probe novel magnetism”, MANA International Symposium, NIMS, Tsukuba, Japan (11/09/2023)

[144] “Quantum dynamics and quantum transport in a spintronic Bose-Einstein condensate in synthetic spaces”, Workshop on Criticality, Dynamics, and Nonequilibrium Behavior in Quantum Systems, Évora, Portugal (10/03/2023)

[143] “Spintronic Quantum Materials and Hybrids”, Purdue-India Quantum workshop, online, 07/14/2023

[142] “Boron Nitride (h-BN): A Two-dimensional Material for Quantum Technologies”, Special Session “Quantum Chip”, PIERS (Photonics and Electromagnetics Research Symposium), Prague, Czech (07/2023)

[141] “Spintronic quantum matter”, Molecular Quantum Information Discussions, Copenhagen, 06/30/2023

[140] “Emerging quantum materials for (bio)magnetometry(?) – from topological materials to defects in insulators”, Workshop on Ultrasensitive Biomagnetometers with Macro to Nano Resolution (BIO-MAG), Copenhagen, 06/21/2023

[139] “Atomic BEC as platform for quantum transport, quantum simulation and quantum

chemistry”, Quantum Science Center (QSC) Summer School, held at Purdue University, West Lafayette, USA (04/29/2023)

[137] “Emerging platforms for topological superconductor qubits”, Workshop “Emerging platforms for quantum computing”, Tohoku University, Sendai, Japan (04/10/2023)

[136] “Emerging magnetism in stacked vdW heterostructures between layered antiferromagnets”, in invited session “Novel Emergent Magnetism in Moiré Superlattices”, American Physical Society (APS) March Meeting 2023, Las Vegas, 03/06/2023

[135] “Methods and Progresses for Manipulating and Measuring Topological Superconductor Materials & Devices”, kick-off meeting and workshop for NSF ExpandQISE project “Developing Research and Education Programs in Quantum Information Science and Engineering with Research on Locally Tunable 2D Topological Superconductors” at Univ. of Wyoming, 02/10/2023

[134] “Optical Characterizations of twisted 2D materials”, Physical Quantum Electronics (PQE) 2023, Snowbird, Utah, USA (01/11/2023)

[133] “Pursuing Topological Superconductivity in Topological Insulator/Superconductor Hybrids”, Pioneer Symposium “Topological superconductivity and correlated topological phases”, KPS (Korean Physical Society) 70th Anniversary and 2022 Fall Meeting (talk given online), Busan, Korea, 10/20/2022

[132] “Topological Insulator based quantum devices”, DOE Center for Integrated Nanotechnologies (CINT) user conference (online, 09/20/2022)

[131] “Transport Probes of (Candidate) Non-Abelian-Anyon Materials”, 1st International Conference on Physics under Synergetic Extreme Conditions held jointly with the Summer School of SECUF (SECUF-2022), organized by the Synergetic Extreme Condition User Facility (SECUF), Institute of Physics, Chinese Academy of Sciences (online, 07/19/2022)

[130] “Charge Density Waves (CDW) & Topological Quantum Materials”, 9th International Charge Density Meeting (ICDM9), held at Aarhus Univ., Aarhus, Denmark (06/13/2022)

[129] “Emerging Materials for Quantum Information Sciences”, Quantum Science Center (QSC) Summer School, held at Purdue University, West Lafayette, USA (05/08/2022)

[128] “Spintronic quantum material hybrids: from nonlinear transport to noncollinear magnetism”, NORDITA program “Light-Matter Interaction in Two-Dimensional Nonlinear Materials”, Stockholm, Sweden (04/13/2022)

[127] “Three questions on Quantum Materials”, Villum Investigators Gathering,

Klitgården, Skagen, Denmark (11/9/2021)

[126] “Quantum materials”, iMAT (Aarhus Centre for Integrated Materials) review meeting, Aarhus University, Denmark (11/1/2021)

[125] “Quantum sensing, from materials to universe”, Frontier Research in DUO (FriDUO) Symposium, Tohoku University, Japan (online, 09/28/2021)

[124] “Van der Waals (vdW/2D) materials for spintronics and quantum technologies”, Danish Physics Society Annual Meeting, Middelfart, Denmark (06/21/2021)

[123] “Two-dimensional (2D)/Van der Waals (vdW) quantum materials”, SMART Lighthouse Summer School/Workshop, Sandbjerg, Sonderborg, Denmark (06/15/2021)

[122] “Atomtronic Spintronics: from Quantum Chemistry to Quantum Transport”, Online School and Discussion Meeting on Trapped Atoms, Ions and Molecules, organized by International Center for Theoretical Sciences, Tata Institute for Fundamental Research, India (05/21/2021)

[121] “Two-dimensional materials for biosensing applications”, AIMR-Fraunhofer ENAS Institute Joint Workshop (online), 04/22/2021

[120] “Exploration of quantum AI for COVID diagnosis”, AIMR-IFS-ISM Joint Workshop, online, 04/21/2021

[119] “Van der Waals magnets based heterostructures --- platforms to engineer and probe novel magnetism”, American Physical Society (APS) March Meeting, (online) 03/28/2021

[118] “New opportunities for surface science and sensor devices with two-dimensional materials and hybrids”, iNano International Symposium, Aarhus University, Denmark (online, 01/13/2021)

[117] “Photocurrent as probe for Topological Semimetals”, Workshop for Kakenhi New Science Program, Japan -- 2nd Meeting of Discrete Geometric Analysis for Materials Design (online, 01/09/2021)

[116] “Recent Experimental Studies on 2D/topological material hybrids”, mini-workshop held by Los Alamos National Laboratory (online, 12/21/2020)

[115] Topological and 2D materials for/using spintronic and quantum devices, OIST-Tohoku Joint Quantum Meeting (online, 11/24/2020)

[114] “How to measure “topology” in topological/quantum materials (using optical/optoelectronic methods)”, Workshop for Kakenhi New Science Program, Japan -- 1st Meeting of Discrete Geometric Analysis for Materials Design (online,

06/17/2020)

[113] “Quantum Measurements of Quantum Matter”, 2<sup>nd</sup> Purdue-IU joint workshop on quantum science, Indiana Univ. Bloomington, IN (03/09/2020)

[112] “Purdue Quantum Science and Engineering Institute”, Northwest Quantum Nexus Workshop – “Quantum Computing, Sensing, and Simulation with Cold Atoms”, Washington State Univ., Pullman WA (02/20/2020)

[111] “Hybrid Quantum Materials and Devices -- a case study: Topological Josephson Junctions”, Quantum Community Denmark Conference, Aarhus Institute for Advanced Studies (AIAS), Aarhus, Denmark (01/09/2020)

[110] “Quantum Matters for sensing applications”, Quantum-life Workshop, Novo Nordisk Foundation, Hellerup, Denmark (11/06/2019)

[109] “Quantum Materials for sensing applications”, Quantum Technologies and Sensing Workshop, IEEE Nuclear Science Symposium (NSS) and Medical-Imaging Conference (MIC), Manchester, UK (10/27/2019)

[108] “Spin-helical Particles: An Enabling Platform for Quantum Matter and Quantum Technologies”, 66th AVS (American Vacuum Society) International Symposium, Columbus, Ohio (10/22/2019)

[107] “Topological protection in topological insulator based spintronic and Josephson devices”, SPP1666 DFG Workshop on Topological Insulators, Potsdam, Germany (09/09/2019)

[106] “Spin-orbit-coupled Bose-Einstein Condensate as playground to explore quantum collision and chemistry”, 24th European Conference on Few-Body Problems in Physics, Surrey, UK (09/06/2019)

[105] “Manipulating Dirac Cones - from *twisted* bilayer graphene to *hybridized* topological insulator”, CarbonHagen 2019, Copenhagen, Denmark (08/22/2019)

[104] “Towards Topological Superconductors and Topological Semimetals from Topological Insulators”, Quantum Matter Workgroup, Los Alamos National Lab., Los Alamos, USA (07/31/2019)

[103] “Topological Josephson Junctions”, AIMR Workshop “quantum materials and spintronics --- spin, topology and superconductivity”, Sendai, Japan (07/12/2019)

[102] “Realization of a symmetry protected bosonic topological state in a synthetic space”, AIMR Workshop “quantum materials and spintronics --- spin, topology and superconductivity”, Sendai, Japan (07/11/2019)



- [101] “Topological insulator based quantum devices: from spin batteries to Josephson junctions”, Workshop on topological quantum information sciences, held in Argonne National Lab, Argonne, IL (05/08/2019)
- [100] “New “spins” in quantum matter and technologies”, International Symposium on Quantum Science and Technology, Purdue University, West Lafayette, IN (04/23/2019)
- [99] New “spins” in quantum technologies, Purdue-IU Workshop on Quantum Science and Technologies, Purdue Univ. (02/26/2019)
- [98] New “spins” in quantum technologies, Quantum Materials Workshop, Oak Ridge National Lab. (02/18/2019)
- [97] Topological Quantum Matter (3 lectures), Workshop on Topological Quantum Matter, held in University of Tokyo, Tokyo, Japan (02/10-12, 2019)
- [96] “Controlling Thermal Transport with Topologically Guided Heat Carriers”, NSF EFRI Review, San Diego (10/18/2018)
- [95] “What Are Unique Transport Signatures of Topological Insulators”, International Union of Materials Research Society – International Conference on Electronic Materials 2018 (IUMRS-ICEM 2018), Daejeon, South Korea, 08/25/2018
- [94] “Quantum+ Technologies Research at Purdue Quantum Center”, US Army Netcom Briefing Workshop on Quantum Technologies, Siesta Vista, Arizona (04/18/2018)
- [93] “Field effect photoconductivity in graphene on undoped semiconductor substrates” (talk presented by PhD student T-F. Chung), SPIE Micro- and Nanotechnology Sensors, Systems, and Applications, Ultrafast Bandgap Photonics Conference, Orlando, FL, (04/18/2018)
- [92] “What are topological insulators good for?” (given via video conference), Symposium “highlights in condensed matter physics”, Ulm, Germany (04/12/2018)
- [91] “Topological Insulator based Josephson Junctions: a platform to probe topological superconductivity”, Quantum Materials Symposium (QMS 2018), Muju, South Korea, 02/26-03/01/2018
- [90] “Topological quantum transport and phase transitions– from topological insulators to semimetals and superconductors”, AIMR (Advanced Institute for Materials Research) International Symposium, part of Kick-off Symposium for World Leading Research Centers in Materials Science and Spintronics, Tohoku University, Sendai, Japan, 2/21/2018
- [89] “Spintronics meets Topological Insulators & other quantum materials”, Tohoku-Purdue Joint Spintronics Workshop, Sendai, Japan, 2/18/2018

- [88] “Driving topological transitions in topological insulators by manipulating surface Dirac cones”, BIRS Workshop, "Relativistic Fermions and Nodal Semimetals from Topology", Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Banff, Canada (02/11-02/16/2018)
- [87] “Current induced electronic and nuclear spin polarizations in topological insulators”, Symposium on *Magnetic Frontiers: Topological Insulators and outlook for technology*, Nancy, France (09/21/2017)
- [86] “Observation of current-induced, long-lived persistent spin polarization in a topological insulator: a rechargeable spin battery”, Spintronics X Symposium, SPIE Optics & Photonics Conference, San Diego, CA, 8/10/2017
- [85] “How to measure topology in transport?”, Mini Workshop Mathematical Aspects of Topological Phases of Matter and Quantum Computing, held at Tohoku University, Sendai, Japan (07/25/2017)
- [84] “Quantum transport in 3D topological insulators under high magnetic fields”, 2017 Workshop on Novel Phenomena in High Magnetic Fields, High Magnetic Field Laboratory (CHMFL) of the Chinese Academy of Science (CAS), Hefei, China , 06/04/2017
- [83] “Raman Spectroscopy of Graphene-based Materials & beyond”, RamanFest 2017 Symposium, a conference on advanced and applied Raman spectroscopy organized by Horiba Inc., Purdue University (06/01/2017)
- [82] “Quantum Coherent Transport in Atoms & Electrons”, Workshop on Coherence Effects in Physics and Chemistry, Purdue University (04/28/2017)
- [81] “Charge, Spin and Thermal Transport in Topological Insulators: Some New Surprises”, The KITS 2017 Forum: New Horizons in Condensed Matter Physics, Inauguration Conference for Kavli Institute of Theoretical Sciences (KITS), Beijing (03/27/2017)
- [80] “Topological insulators as electrically controlled sources of spin polarization”, International Symposium on Spintronics, Japan Society of Applied Physics Meeting, Niigata, Japan (09/15/2016)
- [79] “Topological Insulators: Materials and Transport”, Symposium on Quantum Materials Synthesis (QMS), co-organized by Moore Foundation and Rutgers Univ., New York (08/30/2016)
- [78] “Probing and manipulating Dirac electrons in graphene and topological insulators”, Oak Ridge National Lab Center for Nanophase Materials Sciences (CNMS) User Meeting, Oak Ridge Tennessee (08/11/2016)

[77] “Magnetotransport in topological insulator nanowires: spin-helical Dirac fermions on a cylinder”, 22nd International Conference on High Magnetic Fields in Semiconductor Physics, Hokkaido, Japan (07/26/2016)

[76] “Magnetotransport in topological insulator nanowires: spin-helical Dirac fermions on a cylinder”, International Workshop on Nanomaterials and Nanodevices, Changchun, China (07/12/2016)

[75] “Dirac on Dirac” van der Waals heterostructures”, International Workshop on Nanomaterials and Nanodevices, Beijing, China (07/09/2016)

[74] “Quantum transport of topological surface states in bulk- insulating topological insulators”, NSF Frontiers of Condensed Matter Physics Workshop on Topological Phases of Matter, NSF, Arlington, VA (05/24/2016)

[73] “Electrically controlled spin polarization in topological insulators”, Workshop on “Topological Spintronic Devices”, organized by SRC C-SPIN Center, held at the University of Minnesota in Minneapolis, Minnesota, (5/12/2016)

[72] “Electronic Transport in Topological Insulators”, 2016 APS March Meeting, Baltimore (03/2016)

[71] “Dirac Fermion Quantum Hall Effects in Topological insulators”, 6<sup>th</sup> international workshop on Emergent Phenomena in Quantum Hall Systems (EPQHS-6), held in Tata Institute of Fundamental Research, Mumbai, India (01/07-01/09/2016)

[70] “Quantum Transport of Spin-helical Dirac Fermions in Topological Insulators”, International Symposium on Nanoscale Transport and Technology (ISNTT) 2015, NTT (Atsugi), Japan (11/2015)

[69] “Raman spectroscopy and microscopy of graphene and other nanomaterials”, Award talk at 2015 Masao Horiba Award Ceremony, held in University of Kyoto, Japan (10/16/2015)

[68] “Electrically generated spin polarization in topological insulators: where are the spins from?”, Topological Spintronics & Skyrmionics Workshop, Grenoble, France, (10/05/2015)

[67] “Transport Experiments in Topological Insulators”, Banff Workshop on “Strongly Interacting Topological Phases”, Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Banff, Canada (09/24/2015)

[66] “Topological insulators: from Dirac fermions to Majorana fermions”, 4<sup>th</sup> International Quantum Science Symposium, Waltham, MA (09/21/2015)

- [65] “Lecture 1: Graphene; Lecture 2: Topological Insulators; Lecture 3: Other topics – thermoelectric and superconducting devices”, Instructor for ICQM (International Center for Quantum Materials) Summer School on 2D Materials, Beijing (07/2015)
- [64] “Topological insulator for spintronics: Current Induced Spin Polarization”, International Workshop on Nanomaterials and Nanodevices, Hohhot, China (07/04/2015)
- [63] “Topological Surface Transport of Spin-Helical Dirac Fermions in Topological Insulators”, Gordon Research Conference (GRC) “Topological and Correlated Matter”, Hong Kong (06/28-07/03/2015)
- [62] “Thermoelectric transistors based on 2D materials”, CMOS Emerging Technologies Research Conference, Vancouver, Canada (05/20/2015)
- [61] “Topological insulator energy efficient devices”, DARPA MesoDynamic Architectures (MESO) Review Meeting, Tyson Corner, VA (04/08/2015)
- [60] “Topological insulator energy efficient devices”, DARPA MesoDynamic Architectures (MESO) Review Meeting, Monterrey, CA (08/19/2014)
- [59] “Topological insulator devices and applications in spintronics (TBD)”, CMOS Emerging Technologies Symposium, Grenoble, France (07/08/2014)
- [58] “Physics and applications of novel structures with CVD graphene: edges, grain boundaries, twisted bilayers, and hybrids” (Focus Session on Graphene), APS March Meeting, Denver, CO (03/2014)
- [57] “The material science of graphene and beyond”, Tutorials for American Physical Society (APS) March Meeting, Denver, CO (03/2014)
- [56] “Bose-Einstein condensates in synthetic gauge fields and spin-orbit coupling: transport and dynamics (TBD)”, Frontiers in Optics 2013/ Laser Science XXIX (the combined annual meeting of the Optical Society of America and the American Physical Society's Division of Laser Science), Orlando FL (10/06-10/10/2013)
- [55] “Manipulation of spin-orbit coupled Bose-Einstein condensates (SOBEC) & Observation of Landau-Zener transitions”, 7<sup>th</sup> Cross-Strait and International Conference on Quantum Manipulation, Beijing, China (06/29/2013)
- [54] “Thermal Transport in Graphene and Graphene-Based Composites”, Graphene/III-V Symposium, 223rd Electrochemical Society (ECS) Meeting, Toronto ON Canada (05/2013) [invitation transferred to graduate student Jiuning Hu [G], who will present this talk]
- [53] Material Research Society (MRS) Spring Meeting 2013, Symposium H “Nanoscale Thermoelectrics—Materials and Transport Phenomena - II”, San Francisco CA (04/2013)

[52] Material Research Society (MRS) Spring Meeting 2013, Symposium P “Graphene and Related Carbon Nanomaterials”, San Francisco CA (04/2013)

[51] 2013 EMN (Energy Materials Nanotechnology) West Meeting on Topological Insulators, Houston, TX (01/07-01/10/2013) [invitation transferred to postdoc Jifa Tian, who will present this talk]

[50] “Purdue Updates --- BEC, Gauge fields, spin-orbit coupling, and photo-association”, Midwestern Cold Atom Workshop (MCAW 2012), University of Illinois at Urbana-Champaign (11/03/2012) [talk given by graduate student Abraham Olson]

[49] “Graphene-semiconductor hybrid as radiation sensors and phototransistors”, Crystal & Graphene Science Symposium-2012-USA, Waltham, MA (09/05/2012)

[48] “Topological insulator energy efficient devices”, DARPA MesoDynamic Architectures (MESO) Review Meeting, San Diego, CA (08/21/2012)

[47] “Interaction of Radiation with Graphene-based Nanomaterials”, Defense Threat Reduction Agency (DTRA) review meeting, Springfield, VA (08/01/2012)

[46] “Graphene based radiation detectors”, Department of Homeland Security (DHS) Academic Research Initiative (ARI) Grantee’s Conference, Leesburg VA (07/23/2012)

[45] “Large scale transferrable graphene for device and sensing applications”, 2012 CMOS (Communications, Microsystems, Optoelectronics, Sensing) Emerging Technology Meeting, Vancouver, Canada (07/19/2012)

[44] “Graphene and Topological Insulator Based Transistors for Beyond Computing Applications”, Device Research Conference (DRC) 2012, State College, PA (06/18/2012)

[43] “Synthetic graphene: material properties and applications”, Virtual Conference on Nanoscale Science and Technology 2012, Chengdu, China (06/04/2012) [invitation transferred to graduate student Jiuning Hu, who presented this talk]

[42] “Graphene” (2 lectures), Canadian Institute for Advanced Research (CIFAR) Nanoelectronics Summer School 2012, McGill University, Montreal, Canada (05/23/2012) (lectures scheduled but not delivered due to canceled trip)

[41] “Graphene for Radiation Sensing and Rad-hard Electronics”, SPIE Defense Science Symposium (DSS), Focus Session on “Novel micro/nano approaches for radiation sensors and sensing materials”, Baltimore, MD (04/23/2012)

[40] “Topological Insulator Coherent Energy-Efficient Devices”, SPIE Defense Science Symposium (DSS), Focus Session on Topological Insulator Devices, Baltimore, MD (04/23/2012)

- [39] “Graphene-based materials for potential energy applications”, Symposium on Nanomaterials for Energy, Purdue University, IN (04/16/2012)
- [38] International Conference and Workshop on Nanostructured Ceramics and other Nanomaterials, New Dehli, India (03/2012) [invited but declined]
- [37] “Molecules and BEC at Purdue: An Update”, Midwestern Cold Atom Workshop (MCAW) -2011, Northwestern University (11/05/2011)
- [36] “Charge and Spin Transport Experiments in Topological Insulator Materials”, Workshop on Topological aspects of quantum coherent states in new materials, University of Chicago. Chicago, IL (10/14/2011)
- [35] “CVD Graphene: Electronic Properties and Applications”, International Workshop on Recent Progress in Graphene Research (RPGR) 2011, Suwon, Korea (10/06/2011)
- [34] “Transport Experiments in Topological Insulator Materials”, Summer Program on “New Topological States of Quantum Matter”, Aspen Center for Physics, Aspen CO (08/17/2011)
- [33] “Interaction of Radiation with Graphene Based Nanomaterials”, Defense Threat Reduction Agency review meeting, Springfield, VA (07/20/2011)
- [32] “Topological Insulator Based Coherent Energy Devices”, DARPA MESO Program Review and Kickoff Meeting (07/07/2011)
- [31] “Transport experiments in topological insulator  $\text{Bi}_2\text{Se}_3$ ”, International Workshop on Physics Driven by Spin-orbit Coupling in Transition Metal Compounds, Beijing, China (06/20/2011)
- [30] “Graphene transistors: from rad-hardness to radiation detection”, SPIE Defense, Security, and Sensing Conference (DSS-2011), Orlando, FL (04/2011)
- [29] “Graphene based radiation detectors”, NSF-DHS Academic Research Initiative (ARI) grantee conference, Washington DC (04/2011)
- [28] “Structural and electronic properties of graphene grown by chemical vapor deposition (CVD)”, American Physical Society (APS) March Meeting, Dallas, TX (03/2011)
- [27] “CVD Graphene single crystal islands and grain boundaries”, 2010 Workshop on Innovative Devices and Systems (WINDS), Kohala, Hawaii (12/2010)
- [26] “Experiments on LiRb Molecules and cold Rb gases”, Midwest Cold Atom Workshop (MCAW)-2010, University of Michigan (11/2010)

- [25] “Electronic properties of chemical vapor deposited graphene”, American Vacuum Society (AVS) 57<sup>th</sup> International Symposium, Albuquerque, New Mexico (10/2010)
- [24] International Workshop on Quantum Coherence and Correlations in Condensed-matter and Cold-atom Systems, Evora, Portugal (10/2010) (trip canceled)
- [23] “Interaction of Radiation with Graphene-based Nanomaterials for Sensing Fissile Materials”, Defense Threat Reduction Agency (DTRA) Annual Technical Review Meeting, Springfield, Virginia (08/12/2010)
- [22] “Thermal Transport and Thermal Logic in Graphene Nanostructures”, Midwest Institute for Nanoelectronics and Discovery (MIND) review meeting, South Bend (Notre Dame), Indiana (08/10/2010)
- [21] “Thermal FET”, Nanoelectronics Research Initiative (NRI) Architecture & Device Benchmarking Workshop, Notre Dame, IN (08/09/2010)
- [20] “Graphene nanoelectronics and thermionics”, University Government Industry Micro/Nano (UGIM) Symposium, Purdue, IN (06/30/2010)
- [19] “Chemical vapor deposited graphene: material and electronic properties”, Electronic Materials Conference (EMC), Notre Dame, IN (06/2010)
- [18] “Thermal transport in graphene nanostructures”, Electrochemical Society (ECS) 217<sup>th</sup> Meeting, Vancouver, Canada (04/2010)
- [17] “Graphene sensors for detecting special nuclear materials”, NSF-DHS ARI grantee meeting on radiation detection of special nuclear materials, Washington DC (04/2010)
- [16] “Research on cold atoms and molecules: ultra-cold molecules and low dimensional atomic gases for quantum information and simulation”, 4<sup>th</sup> Midwestern Cold Atom Workshop, Chicago, Illinois (11/21/2009)
- [15] “Interaction of Radiation with Graphene-based Nanomaterials for Sensing Fissile Materials”, Defense Threat Reduction Agency (DTRA) Annual Technical Review Meeting, Springfield, Virginia (10/21/2009)
- [14] “Graphene: materials and physics of a unique 2D electron system”, Frontiers of Quantum Transport and Quantum Computation (FQTQC'09), Huangshan, China (09/05-09/08/2009)
- [13] “Thermal Transport and Thermal Circuits in Graphene Nanostructures”, NRI-Midwest Institute for Nanoelectronics and Discovery (MIND) review meeting, South Bend, Indiana (08/19/2009)

- [12] “Graphene-based functional devices: from macroelectronics to nanosensors”, Workshop on Graphene Electronics, Army Research Laboratory (ARL), Adelphi, MD (08/12-08/13/2009)
- [11] “Graphene: material, physics and devices”, 55<sup>th</sup> Midwest Solid State Conference, University of Iowa, Iowa City, Iowa (04/19/2009)
- [10] “Graphene sensors for detecting special nuclear materials”, NSF-DHS ARI grantee meeting on radiation detection of special nuclear materials, Washington DC (04/08/2009)
- [9] “Controlling interactions in cold atoms and molecules”, Third Midwestern Cold Atom Workshop, Argonne National Laboratory, Illinois (11/15/2008)
- [8] “Graphene thermal interface materials”, Cooling Technology Research Center (CTRC) Annual Meeting held at Purdue Univ. (10/29/2008)
- [7] International Workshop on “Correlations and Coherence in Quantum Matter”, Evora, Portugal (11/10-11/14/2008) (trip canceled)
- [6] Third International Symposium on Cold Atom Physics (ISCAP-III), Wuhan, China (07/10-07/12/2008) (trip canceled)
- [5] “Graphene Thermal Circuits”, Semiconductor Research Corporation (SRC) – Nanoelectronics Research Initiative (NRI) Kickoff Meeting for Midwest Institute for Nanoelectronics and Discovery (MIND), South Bend, Indiana (06/05/2008)
- [4] “Transport and Phase Coherence in a Disordered Bose-Einstein Condensate”, International Workshop “Conductor-Insulator Quantum Phase Transitions” (CIQPT), Columbus, Ohio (01/10/2008)
- [3] “Superfluid to Insulator Transition in a Disordered Bose-Einstein Condensate”, International Workshop “Bose-Einstein Condensates and Coherent Backscattering” (BECBS’07), Schloss Thurnau, Germany (09/10/2007)
- [2] “Microwave Spectroscopy of Wigner crystals in 2DES and Bilayer Systems: Many-body correlation in electronic quantum solids”, American Physical Society March Meeting, Denver, Colorado (03/09/2007)
- [1] “Probing Disorder Physics with a Bose-Einstein Condensate of Li-7 Atoms”, Interdisciplinary Workshop “Material Simulation Using Ultracold Atomic Gases”, Houston TX (09/15/2006)

**Invited Seminars/Colloquia:**

- [129] “Emerging Materials for Quantum Technologies”, Quantum Research Institute (QRI)/Midwest Quantum Collaboratory (MQC) Seminar, University of Michigan, Ann



Arbor, MI (11/02/2023)

[128] “Emerging Materials for Quantum Information Sciences”, MSNE (Materials Science and Nano Engineering) Department Seminar, Rice University, Houston, TX (10/05/2023)

[127] “Van der Waals Magnets based Heterostructures: platforms to engineer and probe novel magnetism”, Seminar at 2D materials Center, Aachen Univ, Aachen, Germany (07/04/2023)

[126] “New twists in magnetism”, Physics Colloquium, Univ. of North Carolina, Chapel Hill, NC, USA (04/03/2023)

[138] “Emerging materials for majoranas and non-Abelian anyons”, Nordic virtual condensed matter seminar series (03/31/2023)

[125] “Stories of Graphene and How it May Change Our Life”, guest lecture (online) for high school students in AOPE (Arts of Physics Education) program (1/22/2023)

[124] “New spins in 2D materials”, Seminar at Dept. of Physics, Technical University of Denmark (DTU), Denmark, 12/09/2022

[123] “Emerging Materials and Devices for Quantum Information Science (QIS)”, Inauguration lecture, Dept. of Physics and Astronomy, Aarhus University (06/20/2022)

[122] “Making Quantum Matter”, Herbert Newby McCoy Award Distinguished Lecture, Purdue University (online, 11/19/2021)

[121] “Quantum sensing with hybrid quantum materials”, Center for Complex Quantum Systems (CCQ) Colloquium, Aarhus University (10/07/2021)

[120] “Using Josephson Junctions to Measure Topology”, Condensed Matter Physics Seminar, Univ. California at San Diego (online, 06/09/2021)

[119] “New opportunities for surface science and sensor devices with two-dimensional materials and hybrids”, Seminar at Institute of Functional Nano and Soft Materials, Suzhou University, Suzhou, China (01/07/2021)

[118] Basic Introduction to Quantum Science and Technology, Lecture at Jinan University, Zhuhai, China (12/03/2020)

[117] “Spin-helical Particles: An Enabling Platform for Quantum Matter and Quantum Technologies”, Physics Colloquium, Washington State Univ. (02/21/2020)

[116] “Spin-helical Particles: An Enabling Platform for Quantum Matter and Quantum Technologies”, Center for Quantum Research and Technology (CQRT) Seminar, Univ.

of Oklahoma (12/5/2019)

[115] “Spin-helical Particles: An Enabling Platform for Quantum Matter and Quantum Technologies”, Seminar at Fermi National Lab (10/30/2019)

[114] “Quantum materials for sensing applications”, ECE (Electrical and Computer Engineering) Seminar, Texas Tech University (10/04/2019)

[113] “Optically synthetic spin-helical particles: an enabling platform for colliding, reacting and engineering novel quantum matters”, Physics Colloquium, Penn State University (09/19/2019)

[112] “Topological protected quantum devices: from spin batteries to Josephson Junctions”, CAMP (Condensed matter and Atomic/molecular physics) seminar, Penn State University (09/18/2019)

[111] “Quantum synthesis and quantum transport in an optically dressed atomic BEC”, Quantum Optics Seminar, University of Copenhagen, Denmark (08/23/2019)

[110] “Topological Josephson Junctions and Topological Superconductivity --- experimental studies of topological insulator/superconductor hybrid quantum devices”, Seminar, RIKEN, Japan (07/08/2019)

[109] “Topological insulator based quantum devices: spin batteries and Josephson Junctions”, Seminar at Center for Quantum Devices, Univ. of Copenhagen, Denmark (05/03/2019)

[108] “Spin-helical particles: an enabling platform for quantum matter and quantum technologies”, Physics Colloquium, University of Texas at Dallas (04/12/2019)

[107] “Spintronic” Quantum Transport, Chemistry and Interferometry in an atomic BEC, AMO Physics Seminar, University of Michigan (03/19/2019)

[106] New “spins” in quantum technologies, Colloquium, Oak Ridge National Laboratory (02/18/2019)

[105] “Hybrid Quantum Materials”, Villum Fonden, Copenhagen, Denmark (02/05/2019)

[104] Colloquium, “Three new materials paradigms for solid state electronics”, Paul-Drude-Institute for Solid State Electronics, Berlin, Germany (01/14/2019)

[103] “How to measure and use topology in electronic transport and devices”, Physics Colloquium, Emory University, Atlanta, 10/23/2018

[102] “Quantum Matter Interferometry in Synthetic Spaces”, Physics Colloquium, Georgia Tech, Atlanta, 10/22/2018

- [101] “How to measure and use ‘topology’ in electronic transport and devices”, Physics Colloquium, Iowa State University, 09/24/2018
- [100] “Surface sciences and chemical processes with optical and scanning probes: some case studies”, Seminar at KAIST (Korea Advanced Institute of Science and Technology), Daejeon, South Korea, 08/23/2018
- [99] “What are unique and useful about topological insulators?”, Physics Colloquium, University of Regensburg, Germany (07/04/2018)
- [98] “Two-pathway interference measurements in quantum matters: from quantum transport to quantum chemistry”, Zhong Guan Cun Forum for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences (06/15/2018)
- [97] “How to engineer, measure and use topological quantum matter – with new spins and surprises”, Physics Colloquium, University of Waterloo, Canada (05/08/2018)
- [96] “Novel two-dimensional (2D) electron systems in topological and 2D materials: new playground for physics and devices”, Physics Seminar, University of Vienna, Austria (03/01/2018)
- [95] “Topological and 2D materials: new playground for physics and devices”, Physics Colloquium, Carnegie Mellon University, Pittsburgh, PA (11/20/2017)
- [94] “Topological and two-dimensional materials: new playground for physics and devices”, Ole Roemer Colloquium, Department of Physics and Astronomy, Aarhus University, Denmark (10/09/2017)
- [93] “Topological and 2D materials for electronic and nuclear spintronics”, G-Spin Seminar, Tohoku University, 07/21/2017
- [92] “Novel two-dimensional (2D) electron systems in topological and 2D materials: new playground for physics and devices”, Joint AIMR-IMR-TopoMat Seminar, Tohoku University, 07/18/2017
- [91] “What are unique charge and spin transport signatures of 3D topological insulators?”, RIKEN Seminar, RIKEN, Wako, Saitama, Japan (07/14/2017)
- [90] “Two-dimensional crystals: building blocks for new materials and sensing/energy applications”, Seminar at NIMS (National Institute for Materials Science), Tsukuba, Japan (06/29/2017)
- [89] “Quantum transport in a spin-orbit coupled Bose-Einstein Condensate”, AMO Physics Seminar, Rice University (05/26/2017)

- [87] “Topological and 2D materials: new playground for physics and devices”, Physics Colloquium, University of California at San Diego (01/26/2017)
- [86] “Stacking up new materials”, Joint Seminar in Department of Chemical and Biochemical engineering and Department of Physics, Hong Kong University of Science and Technology, Hong Kong (12/16/2016)
- [85] “Quantum dynamics and transport in an atomic Bose-Einstein condensates with Raman-induced synthetic band structures and spin-orbit-coupling”, AMO Physics Seminar, Northwestern University, Chicago (12/12/2016)
- [84] “Electronic transport in topological insulators”, Condensed matter physics seminar, Texas A&M University (11/11/2016)
- [83] “Electronic transport in topological insulators”, Condensed matter physics seminar, Michigan State University (10/10/2016)
- [82] “Optically synthetic quantum matter: from new molecules to novel condensates”, AMO Physics Seminar, University of California at Berkeley (05/04/2016)
- [81] “Updates on transport experiments in topological insulators”, Condensed Matter Physics Seminar, University of Illinois, Urbana (04/22/2016)
- [80] “Topological insulators: the more insulating, the better conduction?”, Physics Colloquium, Virginia Tech (04/01/2016)
- [79] “What are unique “topological” electronic transport signatures in topological insulators?”, Dahlem Center for Complex Quantum System Colloquium, Freie Universität Berlin (Fu-Berlin), Berlin, Germany (02/16/2016)
- [78] “Electronic transport in topological insulators”, Condensed Matter Physics Seminar, Carnegie Mellon University (2/11/2016)
- [77] “Topological surface electronic transport in topological insulators”, Condensed Matter Physics Seminar, UCLA (01/27/2016)
- [76] “What are topological insulators good for?”, RQMP Seminar, University of Montreal, Canada (01/18/2016)
- [75] “What are topological insulators good for?”, EE Seminar, Indian Institute of Technology (IIT) Bombay (01/06/2016)
- [74] “Topological Quantum Matter”, Physics Colloquium, University of Buffalo (12/10/2015)
- [73] “Spin-helical surface Dirac fermions in topological insulators: quantum transport

and potential applications”, Condensed matter physics seminar, Rutgers University, NJ (12/01/2015)

[72] “Topological Quantum Matter”, Herb Condensed Matter Seminar, University of Wisconsin-Madison (11/12/2015)

[71] “Topological Quantum Matter”, Physics Colloquium, Purdue University (10/22/2015)

[70] “Raman spectroscopic studies of Graphene and related materials”, Physical Chemistry Seminar, Department of Chemistry, Purdue University (09/09/2015)

[69] “Topological Surface State Spin-Helical Dirac Fermions: Quantum Transport and Potential Applications”, IAS (Institute for Advanced Studies) Seminar, Tsinghua University, Beijing (07/10/2015)

[68] “Quantum Transport of Surface Dirac Fermions in Topological Insulators – from “half-integer” quantum Hall effect to “half-integer” AB oscillations”, ICQM (International Center for Quantum Materials) Seminar, Peking University, Beijing (07/07/2015)

[67] “Electronic Transport in Topological Insulators”, Condensed Matter and Nanophysics Seminar, University of Delaware (04/28/2015)

[66] “Quantum Dynamics in a Bose-Einstein Condensate with Synthetic Gauge Fields”, Physics Colloquium, Miami University (04/01/2015)

[65] “Topological surface transport in topological insulators”, Center for Complex Quantum Systems Seminar, Department of Physics, University of Texas at Austin (03/24/2015)

[64] “What are topological insulators good for?”, Solid State Sciences and Electronics Laboratory Seminar, Department of Electrical and Computer Engineering, University of Michigan (02/17/2015)

[63] “Atomic Lego with 2D materials: a new playground for condensed matter physics and nanotechnology”, Physics Colloquium, University of Washington (02/02/2015)

[62] “Transport and Dynamics in Spin-Orbit Coupled BECs”, Seminar at the BEC Center, University of Trento, Trento, Italy (11/17/2014)

[61] “Electronic Properties of Dirac Materials: From Graphene to Topological Insulators”, Seminar in SNS (Scuola Normale Superiore)-NEST (National Enterprise for nanoScience and nanoTechnology), Pisa, Italy (11/06/2014)

[60] “Experimental studies of spin orbit coupled BEC and LiRb cold molecules”, AMO

Physics Seminar, Dept. of Physics, Tsinghua University, Beijing, China (07/31/2014)

[59] “Physics and Applications of Novel Structures with CVD Graphene --- edges, grain boundaries, twisted bilayers; hybrids”, Seminar in Department of Physics, Beijing Normal University, Beijing China (07/30/2014)

[58] “Electronic Properties of Dirac Materials: From Graphene to Topological Insulators”, Condensed Matter Physics Seminar, EPFL, Lausanne, Switzerland (07/09/2014)

[57] “Taming Topological Insulators”, Condensed Matter Physics Seminar, Northwestern University, Chicago, IL (05/22/2014)

[56] “Taming Topological Insulators”, Condensed Matter Physics Seminar, University of Oklahoma, Norman, OK (04/2014)

[55] "Stories of Graphene and Beyond", Seminar, Department of Chemistry and Physics, Indiana State University, Terre Haute, IN (04/08/2014)

[54] “Magnetotransport in Topological Insulators”, MSD Seminar, Argonne National Laboratory, Chicago, IL (03/27/2014)

[53] “Atomic LEGO with 2D materials: a new playground for condensed matter physics”, Physics Colloquium, University of Texas at Dallas, 12/04/2013

[52] “Quantum Hall physics in layered/2D materials: from graphene to topological insulators”, Dept. of Physics, McGill University, Montreal CA (11/07/2013)

[51] “Atomic Lego with 2D Materials: A new playground for condensed matter physics”, Condensed Matter Physics Seminar, Dept. of Physics, Ohio State University (09/26/2013)

[50] “Graphene with controlled disorder: a rich physics playground”, Seminar at Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China (05/31/2013)

[49] “Quantum Transport in Spin-Orbit Systems”, Seminar at Institute for Advanced Studies, Tsinghua University, Beijing, China (05/24/2013)

[48] “Topological insulators: electronic transport and device applications”, Intel Corporation, Science and Technology Center Seminar, Portland OR (11/27/2012)

[47] “Graphene and Topological Insulator Based Transistors for Non-computing Applications”, Applied Physics Seminar (Solid State and Optics Seminar Sponsored by the Flint Fund Series on Quantum Devices and Nanostructures), Yale University, New Haven, CO (11/07/2012)

- [46] “Electronic Transport in Topological Insulators”, Condensed Matter Physics Seminar, University of Illinois at Urbana-Champaign, Urbana, IL (11/02/2012)
- [45] “Graphene Based Radiation Detectors and Rad-hard Electronics”, Special Physics Seminar and Nuclear and High Energy Physics Seminar, Purdue University, West Lafayette, IN (09/19/2012)
- [44] “Electronic Properties of Topological Insulators”, Condensed Matter Physics Seminar, Indiana University, Bloomington, IN (08/31/2012)
- [43] “Electronic properties of topological insulators”, Special Condensed Matter Physics Seminar, Penn State University, State College, PA (06/19/2012)
- [42] “Chasing Dirac particles in condensed matter systems”, Physics Colloquium, Sun Yat-Sen University, Guangzhou China (05/31/2012)
- [41] “Graphene based radiation detectors and rad-hard electronics”, High Energy Physics Seminar, Argonne National Laboratories, Argonne IL (01/2012)
- [40] “Graphene: adventures in quantum mechanics, relativity and nanotechnology”, Wabash College, Crawfordsville IN (11/16/2011)
- [39] “Making Dirac particles in the lab”, Physics Colloquium, Purdue University, West Lafayette IN (10/20/2011)
- [38] “Making Dirac Particles in the Lab”, Physics Colloquium, Rice University, Houston TX (09/21/2011)
- [37] “Experimental studies of electronic properties of graphene and topological insulators”, Seminar in Department of Mechanical Engineering and Microelectronics Research Center, University of Texas at Austin, Austin TX (09/14/2011)
- [36] “Quantum Transport in Graphene and  $\text{Bi}_2\text{Se}_3$ ”, Tsinghua University, Beijing China (06/16/2011)
- [35] “Stories of Graphene and How it might change our life”, Xi’an Jiaotong University, Xi’an, China (06/09/2011)
- [34] “Stories of Graphene and How it might change our life”, University of Macao, Macao, China (06/02/2011)
- [33] “Topological insulators for nanoelectronic devices”, Nanoelectronics Research Initiative (NRI) e-workshop (2/22/2011)

[32] “Stories of large scale graphene”, Condensed Matter Physics Seminar, University of Notre Dame (01/20/2011)

[31] “Stories of large scale graphene”, Condensed Matter Physics Seminar, Case Western Reserve University (11/15/2010)

[30] “Graphene: materials, physics and devices of a novel 2D electron system”, Seminar at Network for Computational Nanotechnology (NCN), Purdue University (04/02/2010)

[29] “Graphene: materials and physics of a novel 2D electron system”, Department of Physics Seminar, Hong Kong University of Science and Technology, Hong Kong, China (03/12/2010)

[28] “Nanoscale thermal engineering and thermal circuits with graphene”, Nanoelectronics Research Initiative (NRI) e-workshop (12/16/2009)

[27] “The carbon story of nanoscience”, Physics Seminar Series, Indiana University at South Bend (11/05/2009)

[26] “Is carbon the new silicon? ---- Toward graphene integrated circuits: issues and perspectives”, Condensed Matter Physics Seminar, University of Oklahoma, Norman, OK (10/30/2009)

[25] “Graphene: Adventures of a Condensed Matter Experimentalist with ‘High Energy’ Physics”, Physics Department Colloquium, University of Oklahoma, Norman, OK (10/29/2009)

[24] “Graphene: physics, materials and devices”, Quantum Electrical Metrology Division Seminar, National Institute for Standard and Technology (NIST), Gaithersburg MD (10/12/2009)

[23] “Graphene: materials and physics of a unique 2D electron system”, Condensed Matter Physics Seminar, Indiana University, Bloomington IN (10/12/2009)

[22] “Controlling Interactions in Cold Atoms and Molecules”, Physical Chemistry Seminar, Purdue University, West Lafayette IN (10/29/2008)

[21] Physics Colloquium, University of Toledo (09/25/2008) [trip canceled]

[20] “Graphene Based Functional Nanomaterials and Devices”, Center for Nanoscale Materials (CNM) Colloquium, Argonne National Laboratory (07/16/2008)

[19] “Disordered Bose-Einstein Condensates: Probing Quantum and Density Fluctuations in Superfluid-to-insulator transitions”, Nuclear Theory/RIKEN Seminar, Brookhaven National Laboratory (05/23/2008)



- [18] “Quantum Coherence and Superfluid-Insulator Transitions in Electronic and Atomic Systems”, Physics Colloquium, Indiana University-Purdue University at Indianapolis (04/24/2008)
- [17] “Superfluid-Insulator Transition and Phase Coherence in Atomic and Solid State Systems”, Condensed Matter Physics Seminar, Northwestern University (02/14/2008)
- [16] “Quantum Science and Technology”, Lecture at Xi’an Jiaotong University, Xi’an, China (12/12/2008)
- [15] “Quantum Correlation and Quantum Coherence”, Lecture at Key Laboratory of Quantum Information, University of Science and Technology of China and Chinese Academy of Sciences, Hefei China (12/06/2007)
- [14] “Quantum Solids of Two Dimensional Electrons”, Lecture at Key Laboratory of Quantum Information, University of Science and Technology of China and Chinese Academy of Sciences, Hefei China (12/05/2007)
- [13] “From Alchemy to Laser Show: A Journey to Understand Interaction and Disorder in Quantum and Nano Systems”, Richard E. Smalley Institute Seminar, Rice University (09/21/2007)
- [12] “Quantum Coherence in Insulators”, Physics Department Seminar, University of Texas, El Paso (04/18/2007)
- [11] “UltraCold Atoms: Interaction, Disorder and Quantum Phase Transition”, Physics Seminar, University of Houston at Clear Lake (03/29/2007)
- [10] “Nanoscience and Quantum Devices with Electrons, Atoms and Photons”, Special Seminar, California Nanosystems Institute (CNSI), University of California, Los Angeles (03/28/2007).
- [9] “High Frequency Dynamics in Nanostructures: Physics, Materials and Devices”, Special Electrical Engineering Seminar, University of California, Los Angeles (03/15/2007).
- [8] “Quantum Coherence in Insulators”, Special Condensed Matter Physics Seminar, Michigan State University (02/22/2007)
- [7] “Quantum Coherence in Insulators”, Special Condensed Matter Physics/Nanoscience Seminar, Purdue University (02/15/2007)
- [6] “Quantum Coherence in Insulators”, Special Physics Colloquium, Texas A&M University (02/06/2007)
- [5] “New Quantum Solids of 2DES in Magnetic Fields and Emergence of Supersolid-like

Phases”, Seminar at Department of Physics, Pennsylvania State University (10/14/2005)

[4] “New Quantum Solids of 2DES in Magnetic Fields and Emergence of Supersolid-like Phases”, Seminar at Department of Physics, Rutgers University (10/12/2005)

[3] “Pinned Quantum Electron Solid—or Eletron Supersolid?”, Seminar in Condensed Matter Theory Group, MIT (05/16/2005)

[2] “New Solid Phases of Two Dimensional Electrons in Magnetic Fields”, Condensed Matter Brown Bag Seminar at Princeton University (09/21/2004)

[1] “Microwave Spectroscopy of Solid Phases in 2D Electron Systems under Magnetic Field”, joint Condensed Matter Physics-AMO Physics-Center of Nanoscale Science and Technology (CNST) Seminar, Rice University (05/20/2004)

### **Research Mentorship**

Mentees’ careers: 9 past group mentees including postdocs (3) or PhD students (5) have become professors in research universities worldwide including the US (4), China (3), Canada (1) or India (1); many have pursued careers in industry (both large companies such as Intel as well as start-up companies founded by themselves), government, etc. Many PhD students have also pursued postdocs.

### **Postdoctoral Research Associates (including Postdoctoral Visiting Scholars):**

*Current (8):*

Dr. Nithin Abraham (PhD, Indian Institute of Science) [Purdue]

Dr. Kim-Khuong Huynh (PhD, Tohoku Univ.) [@Aarhus Univ., joint with Bo Iversen];

Dr. Demid Sychev (PhD, Russia Quantum Center/ Moscow State Pedagogical University) [Purdue, Joint with Shalaev Group]

Dr. Jian Liao (PhD Physics, Institute of Physics - Chinese Academy of Sciences) [Purdue]

Dr. Lei Fu (PhD Chemistry, Wuhan Univ.) [Purdue]

Dr. Lina Liu (PhD Chemistry, Tsinghua Univ) [Aarhus Univ.]

Dr. Chuan-hsun Li (PhD Electrical Engineering, Purdue Univ.) [Purdue]

Dr. Ying Yang (PhD. Tongji Univ.) [MUST, Macau Youth Scholar]

*Past (16):*

Dr. Subhdip Das (PhD, Indian Institute of Science) [postdoc@ Aarhus Univ.] [Current position : staff engineer, Center for Quantum Device, Univ. Of Copenhagen]

Dr. Yaping Qi (PhD, Univ. of Hong Kong) [joint with K.Zou/Univ. British Columbia and Y.Liang, MUST][Current position : Research assistant professor at Tohoku Univ.]

Dr. Kimberly Hsieh (PhD, India Institute of Science) [postdoc @ Aarhus] [Current position: engineer in BlueFors]

Dr. Gavin Hester (PhD, Colorado State Univ.) [postdoc @Purdue, Joint with Banerjee Group] [Current position : **Assistant Professor**, Brock Univ., Canada]

Dr. Guanghui Cheng (PhD Physics, Univ. Science and Technology China) [Current affiliation: Univ. Science and Technology China]

Dr. Boyi Zhou (PhD Physics, Washington Univ. St. Louis)  
Dr. Esat Kondakci (PhD Physics, CREOL, University of Central Florida) [Current affiliation: UCSB]  
Dr. Jifa Tian (PhD Physics, Institute of Physics, Chinese Academy of Sciences) [subsequent & current affiliation: **Assistant Professor**, Department of Physics, Univ. of Wyoming]  
Dr. Biddut Sarker (current affiliation: Inficon)  
Dr. Tailung Wu (current affiliation: Purdue University)  
Dr. Ozhan Koybasi (current affiliation: SINTEF, Norway)  
Dr. Tian Shen (current affiliation: Global Foundries)  
Dr. Amol Patil (current affiliation: Canberra)  
Dr. Romaneh Jalilian (current affiliation: Naugle Needles LLC; awarded ASEE/NSF Small Business Postdoctoral Research Diversity Fellowship)  
Dr. Ping Wang (current affiliation: **Professor**, Huazhong University of Science and Technology, China; awarded “Youth 1000 Talents Plan” Young Faculty Award in China)  
Dr. Liyuan Zhang (current affiliation: **Associate Professor** of Physics, South University of Science and Technology of China; awarded “Youth 1000 Talents Plan” Young Faculty Award in China)

**Research faculty or visiting scholars** (selected):

Assistant Prof. Yaping Qi (Tohoku Univ., 2023-)  
Assistant Prof. Hirofumi Oka (Tohoku Univ., 2021-)  
Assistant Prof. Richard Balog (Aarhus Univ., 2020-)  
Assistant Prof. Xingchen Pan (AIMR, Tohoku Univ., 2020-, joint with Katsumi Tanigaki) ;  
Assistant Prof. Kim-Khuong Huynh (AIMR, Tohoku Univ., 2020-, joint with Katsumi Tanigaki) ;  
Assistant Prof. Guanghui Cheng (AIMR, Tohoku Univ., 2019-2021, again 2023-)  
Assistant Prof. Jana Lustikova (Center for Spintronics and AIMR, Tohoku Univ., 2019-)

Associate Prof. Aki Kumatani (AIMR, Tohoku Univ., 2017-2022) [Current affiliation : Univ. of Tokyo]

Assistant Prof. Alka Sharma (AIMR, Tohoku Univ., 2021-2022) [Current affiliation : ASML];

Assistant Prof. Hiroshi Idzuchi (AIMR, Tohoku Univ., 2018-2021) [Current affiliation : University of Tokyo]

Dr. Irek Miotkowski (Purdue Univ., 2011-2015)

**Graduate Students:**

*Current PhD students (6):*

- Akshay Agarwal (Purdue ECE)
- Shi-wen Feng (Purdue Physics)
- Ihsan Ahmed Kolasseri (Aarhus Physics)
- Felicia Martinez (Purdue Physics)
- Mohammad Sadi (Purdue ECE)
- Sheng-wen Wendy Huang (Purdue Physics, joint with Alex Ma)

*Graduated (15 PhD+2 MSc):*

PhD students:

**Andres E Llacsahuanga Alleca** (Purdue Physics, PhD'2023), Thesis: Heterostructure engineering in 2D van der Waals Materials: Unveiling magnetism and strain effects;

**Chuanhsun Li** (ECE, PhD'2019), Thesis: Bose-Einstein Condensates in Synthetic Gauge Fields and Spaces : Quantum Transport, Dynamics and Topological States; Subsequent and current affiliation : Purdue University (postdoc)

**Yang Xu** (Physics, PhD'2018) [Awards: 2015 H. Y. Fan Award for outstanding graduate research in condensed matter physics from Purdue Physics Department], Thesis: Quantum transport in three-dimensional topological insulators, Subsequent affiliation: Cornell University (postdoc); current affiliation: PI (**Professor**) in Institute of Physics, Chinese Academy of Sciences

**David Blasing** (Physics, PhD'2018), Thesis: Photoassociation in  $^{87}\text{Rb}$  BECs and ultracold  $^7\text{Li}^{85}\text{Rb}$ , Subsequent affiliation: Navy (NSWC) Crane Research Center, and current affiliation: IPG Photonics

**Nirajan Mandal** (Physics, PhD'2018) [awards : 1st place in Birck graduate student research symposium, 2015], Thesis : Optical Studies of Novel electronic materials ; Subsequent & current affiliation: Intel

**Jack Ting-fung Chung** (Physics, PhD'2018) [awarded Bilsland PhD Dissertation Fellowship from Purdue Graduate School 2015; H. Y. Fan Award for outstanding graduate research in condensed matter physics from Purdue Physics Department in 2018], Thesis: Investigations of the electronic, vibrational and optical properties of graphene materials; Subsequent affiliation: Purdue University (short postdoc); Subsequent affiliation: University of California-Berkeley (postdoc); Current affiliation: KLA (Senior Research Scientist)

**Morteza Kayyalha** (ECE, PhD'2018), Thesis : “Electrical, Thermoelectric and Phase Coherent Transport in two-dimensional materials”, Subsequent affiliation: Penn State University (postdoc); Current affiliation: **Assistant Professor of Electrical Engineering**, Penn State Univ.

**Wonjun Park** (ECE, PhD'2017), Thesis: “Graphene composites and foams: synthesis, properties and applications”, Current affiliation: Samsung

**Luis Jauregui** (ECE, PhD'2016), Thesis: “Electronic transport in nano devices based on graphene and topological insulators”, [awarded Intel PhD Fellowship, 2012]

Subsequent affiliation: Harvard University (postdoc) ; Current Affiliation: **Assistant Professor** of Physics, University of California, Irvine

**Robert Niffenegger** (Physics, PhD'2015), Thesis: "Experiments with synthetic spin-orbit coupling and spin transport in Bose-Einstein Condensates", Subsequent affiliation: Intel; Current affiliation: Univ. Massachusetts (**assistant professor**)

**Jiuning Hu** (ECE, PhD'2015), Thesis: "Transport studied in graphene based materials and structures", Subsequent affiliation: Purdue and NIST (joint postdoc), current affiliation: ASML

**Abraham Olson** (Physics, PhD'2015) Thesis: "The dynamics of ultracold atoms in light-induced synthetic gauge fields", [awarded NSF Graduate Fellowship, 2008; NDSEG Graduate Fellowship 2008; Dr. Warner Black Award for practical accomplishments by a Purdue physics graduate student, 2014], Current affiliation: Beckman Coulter

**Isaac Childres** (Physics, PhD'2014), Thesis: "Effects of energetic irradiation on materials and devices based on graphene and topological insulators", Current affiliation: Cephalofair Games Inc. (founder).

**Sourav Dutta** (Physics, PhD'2013), Thesis: "Experimental studies of LiRb: spectroscopy and ultracold molecule formation by photoassociation", [received Dr. Warner Black Award for practical accomplishments by a Purdue physics graduate student, 2012; Purdue Graduate School Bilsland Dissertation Fellowship, 2013; Pancharatnam Distinguished Postdoctoral Fellowship and D.S.Kothari Postdoctoral Fellowship, India, 2013; Karl Lark-Horovitz Award for outstanding research accomplishments by a Purdue physics graduate student (highest award for graduate students in Purdue physics), 2014], Current position/affiliation: **Assistant Professor**, Tata Institute for Fundamental Research (TIFR), India

**Helin Cao** (Physics, PhD'2013), Thesis: "Transport study in graphene and topological insulator", [awarded Grodzin's Summer Research Award, Purdue University, 2008; Karl Lark-Horovitz Award for outstanding research accomplishments by a Purdue physics graduate student (highest award for graduate students in Purdue physics), 2012], Subsequent affiliation: Postdoc in University of Washington, Current affiliation: Intel

Co-advised students:

John Lorenz (Physics, PhD'2014) [with Prof. Dan Elliott]

Adeel Altaf (Physics, PhD'2014) [with Prof. Dan Elliott]

Suprem Das (Physics, PhD'2014) [with Prof. David Janes]

M.Sc. Students:

**Dan Hu** (Innovation Engineering@MUST, M.Sc.'2023, joint with Y. Liang), Thesis “Deep Learning Assisted Raman Spectroscopy for Rapid Identification of 2D materials”

**Gabriel Lopez** (ECE, MS'2010), Thesis: “Graphene Field Effect Transistors for Applications in Radiation Detection”, Current affiliation: Sandia National Labs

### **Undergraduate students:**

More than 40 undergraduate students have performed research in Chen’s laboratory through REU (Research Experiences for Undergraduates), SURF (Summer Undergraduate Research Fellowship), DURIP (Discovery Park Undergraduate Research Internship) and other programs since 2007; many of these students have entered graduate schools such as Colorado-Boulder, Cornell, Duke, Harvard, MIT, Princeton, Purdue, Rice, Stanford, UCLA, UCSB, UT-Austin, Yale etc.

### **Teaching**

#### **Instructor:**

ECE201: “Linear Circuit Analysis”, Spring 2019, Fall 2015  
PHYS 342 “Modern Physics”, Purdue University, Fall 2017, Fall 2016,  
PHYS 545: “Solid State Physics”, Purdue University, Spring 2017  
PHYS 220: “General Physics”, Purdue University, Spring 2015  
PHYS 522: “Introduction to quantum optics and quantum photonics”, Purdue University, Spring 2014, Spring 2016  
PHYS 344: “Modern Physics”, Purdue University, Fall 2013  
PHYS 272: “Electric and Magnetic Interactions”, Purdue University, Fall 2010, Fall 2011, Spring 2013  
PHYS 570X: “Carbon nanophysics” (new course developed), Purdue University, Spring 2009, Spring 2010  
PHY515: “Statistical physics”, Purdue University, Fall 2008, Fall 2009, Spring 2011, Spring 2012  
PHY330: “Intermediate electricity and magnetism”, Purdue University, Spring 2008

#### **Teaching Assistant:**

EE201: “Signals and systems”, Princeton University, Fall 2000  
18.085: “Advanced mathematical methods for engineers”, MIT, Fall 1998 & Spring 1999

### **Professional Services (selected)**

#### **Editorial:**

Associate Editor, *AVS Quantum Science* (AQS), published by American Institute of Physics (AIP), 2019-2023

Editorial Board Member in Physics, “*Science Bulletin*” (Elsevier), 2018-2022

Editorial Board Member in Physics, Nature’s *Scientific Reports* (2011-2018)

Co-editor, Focus issue on “2D Stacked Devices”, 2D Materials, published under iop.org

(2015)

**Grant and Proposal Reviewer:**

National Science Foundation (NSF) (DMR, PHYS and ECCS divisions)  
Department of Energy (DOE)  
Department of Defense (DOD) --- Army Research Office (ARO) and Defense Threat Reduction Agency (DTRA)  
Department of Homeland Security (DHS)  
Moore Foundation  
Research Corporation  
American Chemical Society-Petroleum Research Fund  
Kentucky Science and Engineering Foundation (KSEF)  
Grand Challenge institutional investment for a major US research university  
European Research Council (ERC)  
European Science Foundation (Graphene Flagship)  
Austrian Science Fund (FWF)  
German Research Foundation (DFG)  
Swiss National Science Foundation (SNSF)  
Netherlands Organization for Scientific Research  
Israeli Ministry of Science, Technology and Space  
Israel Science Foundation  
Chinese Academy of Sciences (CAS)  
King Abdulaziz City for Science and Technology (KACST, the national science agency of Saudi Arabia) via American Association for the Advancement of Science (AAAS)'s Research Competitiveness Program  
Georgian Science Foundation  
Singapore-MIT Alliance for Research and Technology Innovation Center Fund  
Nazarbayev University Research Proposals  
National High Magnetic Field Laboratory User Proposals  
SLAC National Labs User Proposals  
NASA Postdoctoral Program (NPP)

**Journal Reviewer:**

Nature  
Nature Materials,  
Nature Nanotechnology,  
Nature Physics,  
Nature Communications,  
Nature's Scientific Reports  
Science,  
Science Advance,  
Proceedings for the National Academy of Sciences (PNAS),  
Physical Review Letters,  
Physical Review X,  
Physical Review A,  
Physical Review B,

Nano Letters,  
ACS Nano,  
Applied Physics Letters  
Proceedings of IEEE  
IEEE Transactions of Nuclear Sciences,  
Nanotechnology,  
Chemical Physics Letters,  
Reports on Progress in Physics,  
Solid State Communications,  
Journal of American Vacuum Society B  
Journal of Physics A: Mathematical and Theoretical  
Journal of Physics B: Atomic, Molecular & Optical Physics  
Journal of Physics: Condensed Matter  
Journal of Physics and Chemistry of Solids,  
The Journal of Physical Chemistry,  
Nanoscale Research Letters,  
New Journal of Physics,  
Journal of Nanomaterials,  
Journal of Nanoengineering and Nanosystems,  
Jordan Journal of Physics,  
Semiconductor Science and Technology,

**Leadership positions:**

Inaugural Director, Purdue Quantum Science and Engineering Institute (PQSEI), 2019-  
[main responsibilities include: help grow and coordinating interdisciplinary research/collaboration/funding as well as external industrial and international partnership for quantum research at Purdue; leading and coordinating Purdue participation in National Quantum Initiative (NQI); helping attracting large centers such as DOE Quantum Science Center (QSC) and NSF IUCRC Center for Quantum Technology (CQT); overseeing staff including managing director and admin assistant in support of center operations etc.; overseeing establishment and expansion of shared quantum research facilities]

Associate Director of Research, Birck Nanotechnology Center (2018-2019) [main responsibilities include: oversee staff scientists; help grow interdisciplinary research/collaboration/funding as well as external industrial and international partnership for Birck Center]

**Boards, Committees and other leadership or advisory services:**

Scientific Advisory Committee, Argonne National Laboratory Center for Nanoscale Materials (CNM), one of the 5 DOE Nanoscale Science Research Centers (NSRCs), 2024-

Leadership council, Aarhus University iMAT (integrated Materials Sciences) Center, 2023-



Purdue University Birck Nanotechnology Center Leadership Council, 2022-2023

Advisor Board Member, Center for Intelligent Energy Systems (Purdue), 2022-

Founding board member, Midwest Quantum Collaboratory, a consortium between Purdue, Univ. of Michigan and Michigan State Univ., 2021-

Governance Advisory Board, Quantum Science Center, a Department of Energy (DOE) Quantum Information Sciences (QIS) Research Center headquartered at Oak Ridge National Lab, 2020-

Co-director, Tohoku Quantum Alliance (TQA), 2020-

Director of Purdue Quantum Center (2016-2019) [PQC becomes PQSEI in 2019]

**Professional Societies and Meetings:**

USA Representative, International Union for Pure and Applied Physics, Commission on Semiconductor Physics (C-8), 2017-

Chair, APS March Meeting Subcommittee for APS DAMOP (Div. Atomic Molecular Optical Physics), and Member of APS March Meeting Program Committee as DAMOP representative, 2017

Program Committee, APS DAMOP (Div. Atomic Molecular Optical Physics), 2015-2018

APS March Meeting Subcommittee for APS DAMOP (Div. Atomic Molecular Optical Physics), 2015-2018

Program Committee, Device Research Conference (DRC), 2013-2015

Organizer, Session Chair or Panelist for professional conferences/events:

Panelist, “Panel discussion: Breaking down barriers to expedite innovation: how can we get all hands on deck to develop use cases and fault-tolerant computers?”, 3rd annual *Commercialising Quantum* Global 2024 organized by Economist, London, UK (06/05/2023) <https://events.economist.com/commercialising-quantum/agenda-2023/?RefID=EM01>

Organizer and co-chair, OIST-TU Joint Quantum Meeting (11/24/2020)

Organizer and chair, 2nd Joint Purdue-Tohoku workshop on spintronics, held at Purdue University (09/11/2019)

Organizer and chair, “AIMR Workshop on Quantum Materials and Spintronics: Spin, Topology and Superconductivity” in WPI-AIMR International Center for Materials Research, Tohoku Univ., Sendai, Japan (07/11-12/2019)

Session Chair, International Workshop “Topology”, held at WPI-MANA, NIMS, Tsukuba, Ibaraki, JAPAN (06/11/2019)

Organizer and chair, International Symposium for Quantum Science and Technology, Purdue University (04/21-23/2019)

Invited participant and panelist, “Catalyzing Industry-University Collaboration in Quantum Technologies”, an NSF-sponsored UIDP (University-Industry Demonstration Partnership) Workshop, Los Angeles, 03/14-15/2018

Co-organizer, Focus Topic “Topological Materials: Synthesis, Characterization and Modeling”, APS March Meeting 2018

Organizer for tutorial “quantum photonics”, APS March Meeting, 2017

Co-organizer, Focus Topic on “2D materials Beyond Graphene” (sponsored by Div. Material Physics) for APS March Meeting, 2014-2016

Session Chair, Session on “Spin-orbit Coupled and Low Dimensional Gases”, American Physical Society (APS) Division of Atomic Molecular and Optical Physics (DAMOP) Annual Meeting, Madison, Wisconsin, (06/2014)

Organizer and Chair of 2013 Midwestern Cold Atom Workshop (MCAW) held at Purdue University, 11/16/2013 (~100 attendees from ~10 universities)

Panelist for Rump Session “Transistors: the next 50 years?” at Device Research Conference (DRC) (06/25/2013)

Co-organizer, Short-course on “2D Materials beyond graphene”, Device Research Conference (DRC), Notre Dame (IN) (06/2013)

Chair, Session on “Nanowires and Nanotubes I”, MRS Spring Meeting, San Francisco, CA (04/2013)

Chair, Session on 2D Topological Insulators, APS March Meeting, Baltimore (2013)

Technical Program Committee, Symposium on Photonics and Optoelectronics (SOPO 2012), Shanghai, China (05/2012)

Chair, Focus Session on Graphene Structure, Dopants, and Defects: Nanoribbons, American Physical Society March Meeting, Dallas (2010)

Chair, Session on Graphene and 2D Nanostructures, American Vacuum Society (AVS) 57<sup>th</sup> International Symposium, Albuquerque (2010)

Co-chair, Session on Graphene Transport, Symposium E-7 Graphene, Ge/III-V, and Emerging Materials for Post-CMOS Applications, Electrochemical Society (ECS) 217<sup>th</sup> Meeting, Vancouver (2010)

Chair, Session on Quantum Optics and Quantum Many-body Physics in Optical Lattices, American Physical Society March Meeting, Portland (2010)

Organizer and Chair, Invited Session on Disordered Quantum Gases, American Physical Society March Meeting, Denver (2007)

**Other University/College/Departmental service (selected):**

Faculty and Leadership Search and related committees

Chair, Purdue University Quantum Information Science (QIS) Cluster Hiring Search Committee (joint between College of Science and College of Engineering), 2023-2024

Computational Science and Engineering Faculty Search Committee, School of Electrical and Computer Engineering, 2018-2019

Experimental Condensed Matter Physics Junior Faculty Search Committee (2017-2019)

Committee member for “Spintronics” preeminent team initiative (2014-)

Search Committee for the Director of Bindley Biosciences Center (2017-2018)

Search Committee for the Head of School of Nuclear Engineering (2016)

College of Science Strategic Plan Working Group on Faculty Hiring (2015-2016)

Theoretical AMO or Condensed Matter Physics Junior Faculty Search Committee (2015)

Physics Department Head Search Advisory Committee (2014-2015)

Committee member for “Quantum photonics” preeminent team initiative (2013-2017)

Experimental AMO Physics Junior Faculty Search Committee (2013-2014)

Theoretical AMO Physics Senior Faculty Search Committee (2013)

Birck Nanotechnology Center Director Search Committee (2010-2011)

Other university/college/departmental services (selected):

Physics Colloquium Committee, Purdue University, 2021-

Purdue University FLAIR (Faculty Leadership Academy for Interdisciplinary Research) Inaugural Fellow, 2019

Hubert James Distinguished Lectures Committee, Purdue Physics, 2018-

School of Electrical and Computer Engineering Qualify Exam Grading Committee, 2018

Physics Graduate Qualify Exam Auxiliary Committee (2007-)

Birck Nanotechnology Center Operations Committee (2016-2017)

University Task Force on Applied Physics/Engineering Physics Program (2014-2017)

Physics Graduate Admission Committee (2011-2014, 2016)

Safety Committee (2010-2015)

Condensed Matter Physics Seminar Co-chair (2010)

Graduate committee members for >30 graduate students from physics, ECE, CHEM, ME, NuclE etc.

### **Miscellaneous Activities (selected)**

#### **Extended Academic/Summer Visits:**

Visiting and Specially Appointed Professor at large, Macau University of Science and Technology, 2020 & 2021

Visiting/Consulting Professor and Foreign Principal Investigator, Advanced Institute for Materials Research (AIMR), Tohoku University, Sendai, Japan (2017-)

Member, Chinese of Academy of Sciences (CAS) IOP (Institute of Physics) Center for International Collaboration (IOPCIC), 2018-

NEST (National Enterprise for nanoScience and nanoTechnology) and SNS (Scuola Normale Superiore), Pisa, Italy (10/14-11/14/2014)

Tsinghua University, Department of Physics (07/18-08/04/2013)

Institute of Physics, Chinese Academy of Sciences, Beijing China (08/2016; 06/28-07/10/2013; 06/13-06/24/2011)

Tsinghua University, Institute for Advanced Studies and Dept. of Physics (05/22-05/31/2013)

Aspen Physics Institute (08/14-08/21/2011; 06/01/2009-06/07/2009)

Physics Department, Brookhaven National Laboratory (05/21-05/23/2008)

Condensed Matter Theory Group, MIT Physics Department (05/10-5/14/2005)

Condensed Matter Group, National High Magnetic Field Laboratory,  
Tallahassee FL (02/2002–04/2005)

Grenoble High Magnetic Field Laboratory, Max-Planck Institute of Solid State  
Research and Centre National de la Recherche Scientifique (CNRS), Grenoble, France  
(08/2000)

IBM Zurich Research Laboratory, Switzerland (08/1999, 07–08/1998)

**Other Coursework/Educational Experiences:**

American Association of Physics Teachers (AAPT) Faculty Workshop (03/2016)

Boulder Summer School for Condensed Matter and Materials Physics “Quantum  
coherence in atomic and condensed matter systems”, University of  
Colorado at Boulder (07/2004)

Harvard University, Cross-registered student in the departments of physics and  
mathematics (1998-1999)

Institute of Mathematics, Fudan University, graduate-level coursework in pure  
mathematics (1996-1997)

**Interdisciplinary Activities** (selected):

Affiliated Faculty and Director, Purdue Quantum Science and Engineering Institute

Affiliated and Residential Faculty, Birck Nanotechnology Center, Purdue University

Affiliated faculty: Semiconductors@Purdue; LEAPS (Leading Energy-Transition  
Advances and Pathways to Sustainability), Purdue Engineering; Purdue Energetics  
Research Center (PERC)

Affiliated PI (and member of governance advisory board): DOE Quantum Science  
Center, Oak Ridge National Lab

Affiliated faculty: the Interdisciplinary Nanoscience Center (iNANO), and integrated  
Materials Science Center (iMAT) and “Quantum Campus Aarhus”, @Aarhus University

Affiliated PI: WPI (World Premier International Research Center)-AIMR (Advanced Institute for Materials Research) [Foreign PI with resident lab], and Core Research Cluster for Materials Science (CRCMS), and Center for Science and Innovation in Spintronics (CSIS), and Center for Spintronics Research Network (CSRN) @ Tohoku Univ.

Past:

Affiliated Faculty: Purdue Energy Center, Purdue Cooling Technology Research Center (CTRRC), Purdue Center for Topological Materials (PCTM)

Member, Purdue “Spintronics” & “Quantum photonics” preeminence initiative

Affiliated Faculty, Midwest Institute for Nanoelectronics Discovery (MIND), a SRC/NRI center (2008-2012)

**Outreach/Diversity in Science:**

“Stories of Graphene and How it May Change Our Life”, guest lecture (online) for high school students in AOPE (Arts of Physics Education) program (1/2023)

Authored a series of undergraduate-level physics experiments for Journal of Virtual Experiments (2016-2017)

Participants in Purdue Nanodays (2012-)

Physics Guest lecture to Harrison High School honors physics class students on material/nano physics (04/2013)

Speaker and collaborator with NCLT (National Center for Learning and Teaching in Nanoscale Science and Engineering) for high school teachers (selected nation-wide), 2009-

Mentor associated with Mentornet.net (e-mentoring network for diversity in science and engineering): having mentored 1 chemistry undergraduate and 1 physics graduate student from under-represented groups

Participated in the science outreach and mentoring programs at Stratford Academy of Science in Houston (2006)

Volunteer and exhibition leader in the National High Magnetic Field Laboratory Annual Open House (2003)

Participated in the science outreach and mentoring programs at Hunter High School in New York (2001) and Stratford Academy of Science in Houston

**Other leadership activities:**

Interviewer for applicants to MIT undergraduate admission for MIT Alumni Association, 2022-

Interviewer for applicants to Princeton undergraduate admission for Princeton Alumni Association, 2015-2022

Vice President and Board of Directors, MIT Alumni Association of South Texas, 2006-2008

President of Rice University Postdoctoral Association (2006) and Representative in the 4<sup>th</sup> Annual Meeting of National Postdoctoral Association (2006)

Co-chairman, Pan-America Visa Security Check Improvement Committee for Chinese Students and Scholars (2003)

Invited participant, US Foreign Policy Colloquium (Washington DC, 2003)

Invited participant, 8th World Business Dialogue (Cologne, Germany, 2001)

Invited participant, 30th International Management Symposium (St. Gallen, Switzerland, 2000)