

# Antiferromagnetic Transistors

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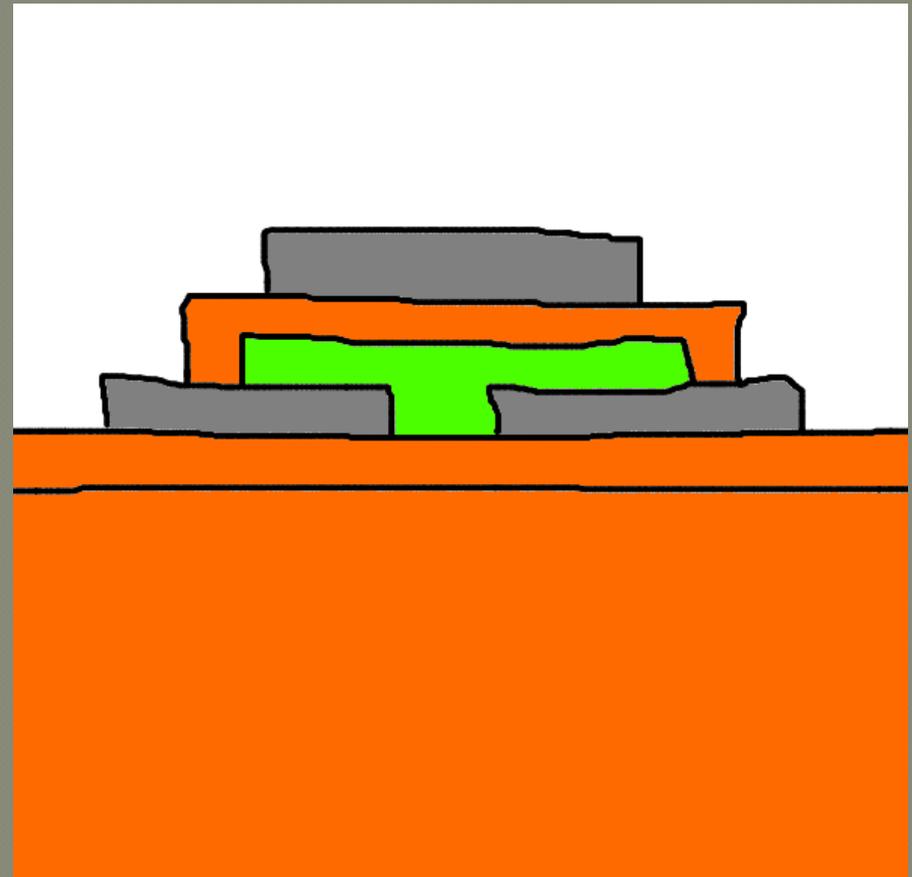
# Outline

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- Overview of the Project
- Substrate Cleaning
- Deposition
- Accomplishments
- What's Next

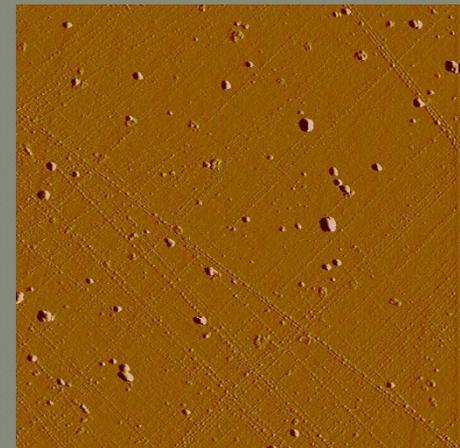
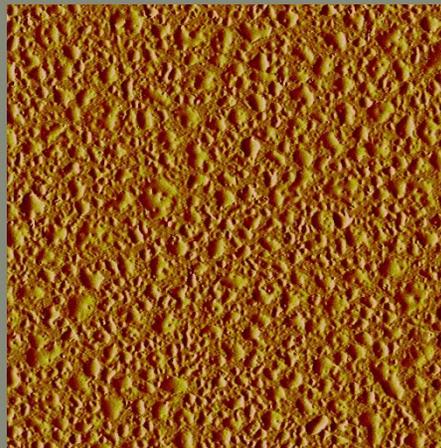
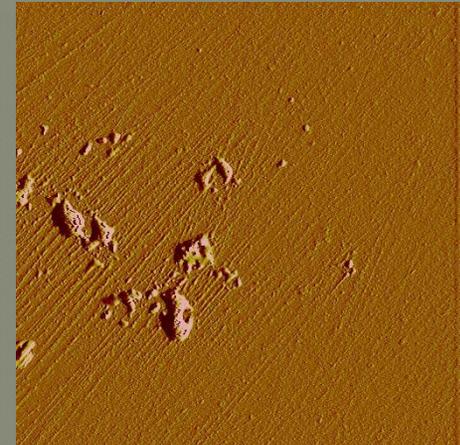
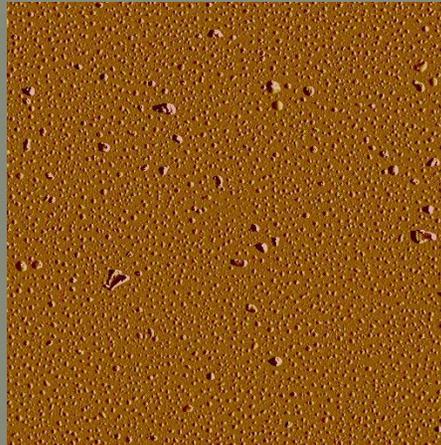
# Antiferromagnetic Transistors

- A new twist on a classic
- Antiferromagnetic vs. Ferromagnetic
- Structure



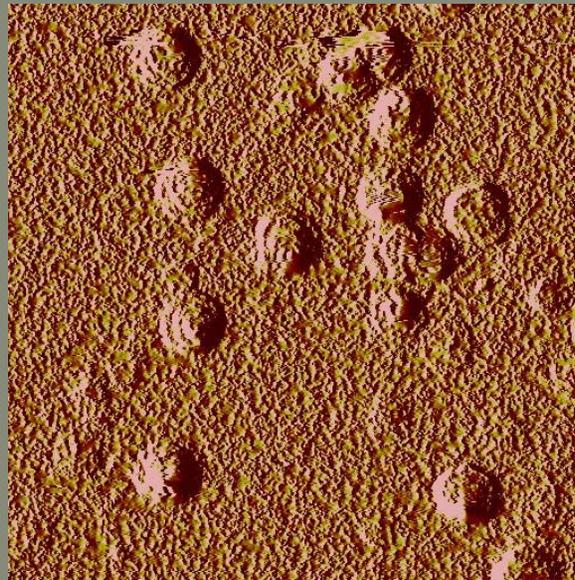
# Substrate Cleaning

- Several iterations before the final process
- Substrate inconsistency



# Acid Etching

- This was only attempted once, and not revisited for obvious reasons.



# Deposition

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- Objectives changed over time
- First revision: Optimize growth parameters

# First Deposition

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- Used growth parameters from other users for other materials
- Failed, no noticeable growth
- Failure attributed to low fluence

# Second Deposition

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- Used growth parameters from predecessor
- Failed, no noticeable growth
- Failure attributed to low fluence
- Objective changed: achieve growth

# Third Deposition

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- Used higher energy from laser, no attenuation
- Failed

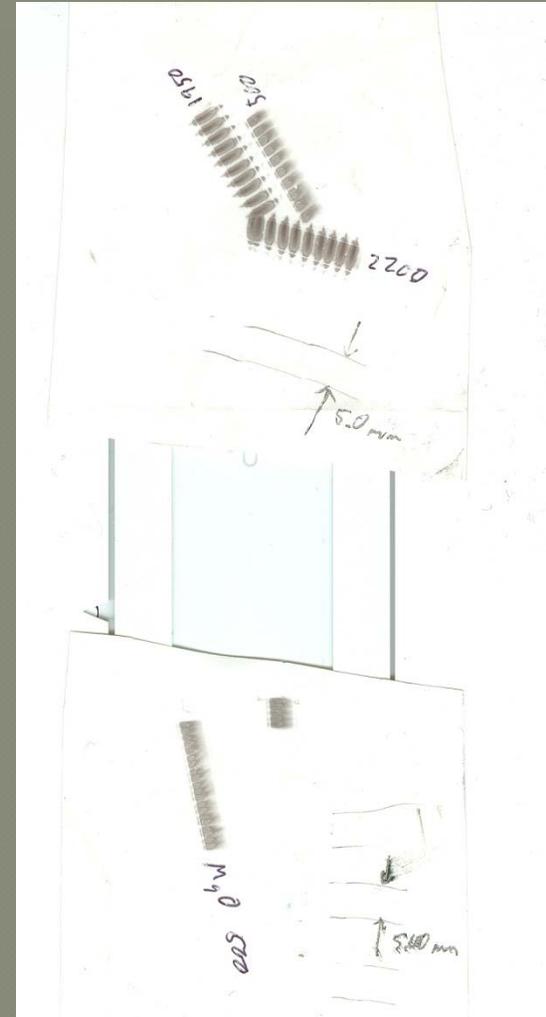
# Fourth Deposition

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- Abandoned custom substrate holder
- Used Si substrates
- Failed

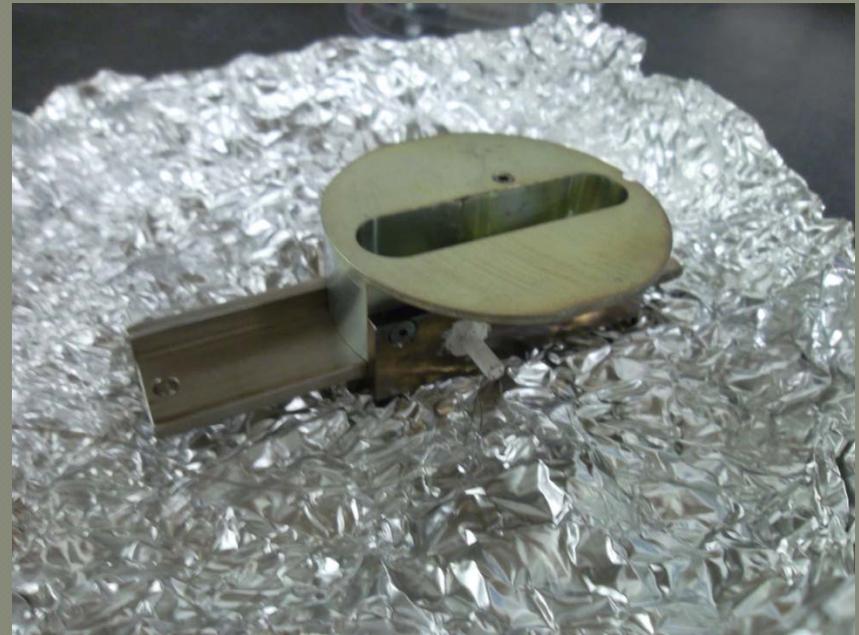
# Analysis of Failure

- Large Spot Size = Low Fluence
- Low Fluence = No Ablation
- Difficulty of depositing MgO and Ni



# Accomplishments

- Codified, repeatable substrate cleaning process
- Identification of deposition problems
- Compilation of deposition parameters
- Creation/Testing of custom sample holder



# What's Next

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- Successful deposition
- Building transistors
- Testing transistors

# Review

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- Overview of the Project
- Substrate Cleaning
- Deposition
- Accomplishments
- What's Next

Questions?

