

# **Transfer of hydrogen in waste nuclear storage : numerical comparison of static and dynamic mass exchange**

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We present a system modeling two-phase (liquid and gas) two-component (water and hydrogen) flows in porous media in the context of radioactive waste storage. The mass exchange between dissolved hydrogen and hydrogen in the gas phase is modeled by two ways : static and dynamic transfer. The first one is equivalent to impose the Henry's law to close the system whereas the second one means that the velocity of the mass exchange between dissolved hydrogen and hydrogen in the gas phase is supposed finite. This is equivalent to specify a mass transfer between the hydrogen components. The system is approached by a finite difference scheme. Some computational results are provided, in which the dynamic transfer model is compared with the static transfer model. We also present some mathematical properties.