

Summer Research Program 2011/2012

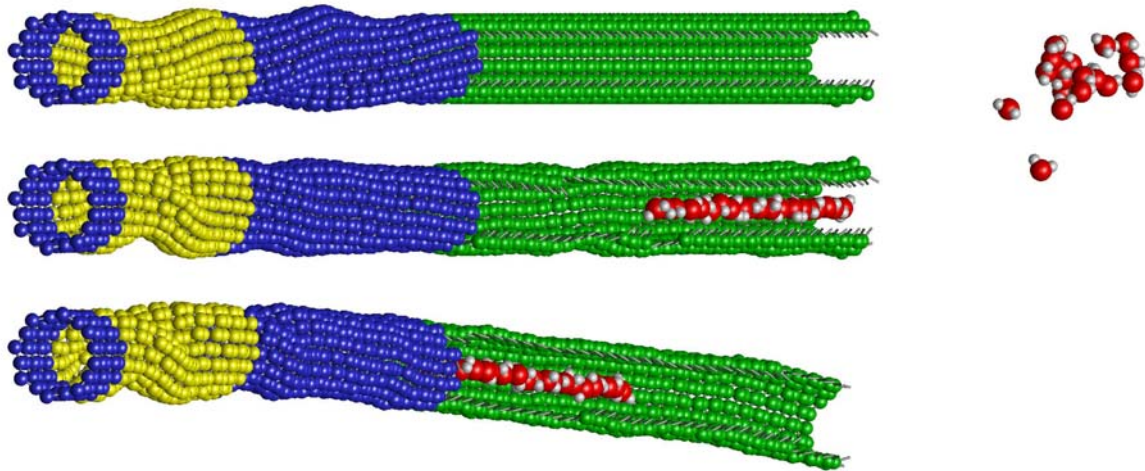
Project Title: Atomic transportation of water and carbon dioxide molecules via carbon nanotubes

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Objective

The project aims to investigate the transportation of water and carbon dioxide molecules in nano-channel like carbon nanotubes using molecular dynamic simulations.

Description



(Figure from Duan, WH, Q. Wang, Water transport with a carbon nanotube pump. ACS Nano, 4 (4) 2338-2344 2010)

The remarkable electrical, mechanical, and thermal properties of carbon nanotubes (CNTs) enable them to be used for the development of devices for microelectromechanical and nanoelectromechanical system applications. The possible employment of CNTs in transporting atoms and molecules, owing to their large surface area and smooth wall, would have a wide range of applications, such as spot welding, novel biomedical therapies, nanopumping devices for atomic transportation as well as the storage of hydrogen and carbon dioxide molecules.

The project welcomes lively and creative candidates who have a strong math foundation from civil engineering, mechanical engineering, chemical engineering and materials engineering.