

Undergraduate experimental research

Growth of carbon nanotubes and hydrogen storage

This project involves the growth of carbon nanotubes by deposition of a transition metal catalyst followed by introduction of carbon containing growth gases at elevated temperatures. In a related project, metal atoms are deposited by evaporation onto a vertically aligned array of carbon nanotubes. Then these atoms are heated to determine if they are mobile on the surface. Hydrogen molecules will adhere to these metal atoms near room temperature, which may provide a suitable hydrogen storage medium. However, it is essential to determine if the metal atoms are stable on the surface of the carbon nanotubes. This research utilizes in varying amounts: gas handling, vacuum systems, optical spectroscopy, other laboratory instrumentation, and probably some electron microscopy.

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