



## SYRACUSE UNIVERSITY

### TECHNOLOGY TRANSFER AND INDUSTRIAL DEVELOPMENT

#### **Boride-based Catalysts Create Better Nanostructures**

*More efficient process cuts costs, improves resulting forms*

The Spencer lab has developed efficient new methods of preparing carbon nanotubes, nanorods and nanospheres in relatively large quantities and high levels of purity.

The invention uses metal boride catalysts or precursors to metal borides to efficiently produce higher quality nanoscale carbon tubes, rods and spheres. The length of nanotubes and rods is extended and the process achieves greater control of composition.

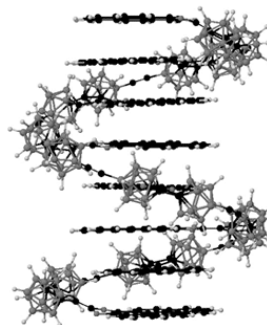
Historically, such nano structures often have been marked by low process yields, unacceptable levels of impurities and lack of compositional control. The Spencer lab's new boride-based pathways provide lower cost, high efficiency and improved control of the morphology of structures produced. The process also reduces energy consumption.

The nanostructures are formed in a high temperature oven on a surface of metal boride catalysts after exposure to aerosol vapors of an organic solvent.

Carbon nanostructures have significant potential for uses ranging from strengthened composites to field-effect transistors and electronic circuitry.



*Chemical vapor deposition (CVD) reactor*



*Proposed helical structure for nanoscale boron cluster assembly*

## SELECTED PUBLICATIONS

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