Pacific Northwest NATIONAL LABORATORY

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Battelle Number(s):

14310

Patent(s) Issued

Available for licensing in all fields

Available Technologies

Nano Structure Control and Selectivity of Hydrogen Release from Hydrogen Storage Materials

SUMMARY

Researchers at PNNL have developed new materials for hydrogen storage applications using nano structure approaches to enhance the properties of conventional hydrogen storage materials used to supply hydrogen to fuel cells.

By incorporating ammonia-borane (H3NBH3) into the mesoporous scaffold, a nanoscale environment is provided resulting in higher purity hydrogen that can be delivered at lower temperatures. The materials are suitable to store high densities of hydrogen for a variety of applications, including fuel cells for example.

ADVANTAGES

* Lighter than batteries for same energy density

* No expansion or foaming during processing

* Results in higher purity hydrogen product that releases more quickly requiring less energy (lower temperature) and filtering

* Non-toxic materials, therefore environmentally friendly

* Durable materials

RELATED LINKS

» **Institute for Interfacial Catalysis**

Related catalysis work at PNNL in hydrogen production and more

http://iic.pnl.gov/

» **Capabilities in Energy Processes & Materials**

U.S. DEPARTMENT OF ENERGY

http://energy-proc-mat.pnnl.gov/

» **Breakthroughs Magazine Article: PNNL co-leads Center for Chemical Hydrogen Storage**

http://www.pnl.gov/breakthroughs/issues/2004-issues/spring-summer/science_business.stm

Patents & Intellectual Property

» Patent #: 7,316,788

» Pub Patent App #: 2009/0258215

Technology Portfolio(s)

» Boranes

» Hydrogen Generation

Potential Industry Applications

» Automotive & Transportation

» Chemicals

» Consumer Products

» Energy & Utilities

» Public Administration & Government

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