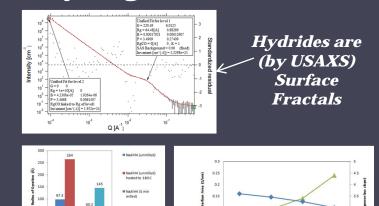
# Enhancing Atomic Mobility and Desorption Kinetics in Light Metal Hydrides (Contract: 0847464; PI: Tabbetha A. Dobbins)

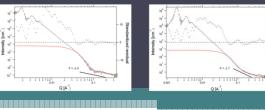
### Microstructure during Dehydrogenation





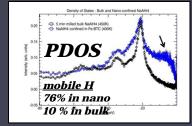
Mass Fractals in Nanoconfinement

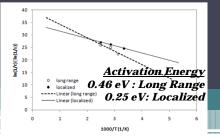
Confined in 200 nm



#### Nanoconfined Hydrides

*Hydrogen Dynamics when Confined in 1.6 nm Fe-BTC MOF* 





# **Project ENERGY**

Hydrogen Storage Design Challenge at LSMSA High School



Science Fair Mentoring





# *Synchrotron X-ray Studies for Scientists and Engineers*

Learning Activities Friday Tours of CAMD beamlines Measurement at CAMD In-class Lectures Solving Homework Problems Exams

#### Primary Textbook Elements of Modern X-ray Physics by Jens Als-Nielsen and Des McMorrow



#### **Citations**

1. Narase Gowda S., Ilavsky J., Gold S.A., Dobbins T., "Ultra Small Angle Xray Scattering (USAXS) Studies of Morphological Changes in NaAlH4", *Materials Challenges in Energy*, Edited by Wicks G.G., et al., **224** pp 51-60 (**2010**).

2. Dobbins T., Ukpai W., "A Study of the Thermodynamic Destabilization of Sodium Aluminum Hydride (NaAlH<sub>4</sub>) with Titanium Nitride (TiN) using Xray Diffraction and Residual Gas Analysis", *Materials Challenges in Alternative and Renewable Energy: Ceramic Transactions* Edited by Wicks G.G., et al. **224** pp 99-106 (**2010**).

3. NaraseGowda, S., Brown C., Jenkins T., Dobbins T., "Quasi-Elastic Neutron Scattering Study of Hydrogen Dynamics in Nano-confined NaAlH4, *PRB*, in preparation.

4. NaraseGowda S., Brown C., Jenkins T., Dobbins T., "Synergistic Effects of Nano-Confinement and TiCl3 Catalysis on NaAlH4 Desorption Studied by Quasi-Elastic Neutron Scattering, *Int. J. Hyd. Energy*, in preparation.

5. Dobbins T., NaraseGowda S., Butler L, "Study of the Morphological Changes in MgH2 Destablized LiBH4 Systems Using Computed X-ray Microtomography", *Journal of Alloys and Compounds*, in preparation.