

XI.8 Metal Hydride Slurry as a Novel Carrier of Hydrogen (Phase I Project)

Mr. Stephen W. Lasher

TIAX, LLC

15 Acorn Park

Cambridge, MA 02140-2390

Phone: (617) 498-5655; E-mail: lasher.stephen@tiaxllc.com

DOE Grant Number: DE-FG02-05ER84339

Pipelines will likely be the ultimate hydrogen delivery system, due to their relatively low cost and high efficiency when transporting hydrogen in large volumes. However, the perceived safety and associated economic implications of hydrogen delivery using high-pressure gaseous pipelines may create barriers to their widespread adoption. To overcome these barriers, this project will develop technology for transporting hydrogen as a metal hydride slurry through pipelines, from a central hydrogen production facility to the point of use. There, the hydrogen can be stored or used immediately by desorbing gaseous hydrogen from the metal hydride material. This concept takes advantage of the low cost and high efficiency of pipeline delivery, but promises to be safer and cheaper than gaseous hydrogen pipelines. The new hydrogen delivery concept could potentially overcome public concerns regarding high-pressure gaseous hydrogen pipelines and facilitate the development of a hydrogen infrastructure. Phase I will identify the appropriate metal hydride and liquid carrier medium, perform bench-scale tests on the slurry to characterize and optimize its transport properties, and develop preliminary layout and design specs for the entire system.