Abstract Submitted
for the SES13 Meeting of
The American Physical Society

Aging Effects in Hydrogen Storage Characteristics of Complex Hydrides[1] LAMONT HENDERSON, SESHA SRINIVASAN, PRAKASH SHARMA, Tuskegee University — The aging effects on the hydrogen storage characteristics and chemical formulations for the complex hydrides are discussed in this presentation. The aging effects due to atmospheric events such as oxygen and moisture coverage and self-decomposition are currently under investigation. The candidate material chosen for this study is Lithium/Magnesium based complex hydride $LiBH_4/LiNH_2/MgH_2$. These materials were prepared using high energy ball milling under Ar/H_2 atmosphere with different milling durations. The chemical structural and microstructural characteristics of the synthesized materials were studied using FTIR, XRD, BET and SEM analytical tools. Hydrogen storage properties such as hydrogen sorption kinetics, cycle life and pressure-composition isotherm (PCI) was examined via high pressure, high temperature Sievert's type apparatus. This current study will shed light to compare and contrast the above mentioned characteristics for the aged samples practically at the same experimental conditions. Furthermore, we will investigate the relation between the aging effects with respect to the crystallite sizes of the candidate compounds and nano-dopant elements.

[1]AIP, SPS, Sigma Pi Sigma Undergraduate Research Grant, and NSF-Energy Sustainability Program are gratefully acknowledged.

Sesha Srinivasan
Tuskegee University

Date submitted: 20 Sep 2013 Electronic form version 1.4