Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Electrochemical Performance of Lithium Iron Phosphate Doped with Tungsten HANU ARAVA, ANDREW TRENCHARD, GAN LIANG, HUI FANG, Sam Houston State University — Due to its high thermal stability, low cost and high theoretical charge capacity, LiFePO4 has emerged as one of the most promising cathode materials for large-scale lithium ion batteries. In this work, we systematically investigated the effect on structure and electrochemical properties brought by W doping on Fe site of $LiFePO_4$. $LiFe_{1-x}W_xPO_4$ (x= 0. 0.01, 0.02, 0.03) samples with and without carbon coating were prepared by using solid-state reaction. The phase and structure of as prepared powders were characterized by X-ray diffraction and scanning electron microscope. Cycling charge and discharge measurement at various C-rates and cyclic voltammetry were employed to reveal the electrochemical properties. Results showed that carbon coating dramatically improved the capacity at fast C-rate. 2 at.% W doping was observed to have the highest charge capacity with 143 mAh/g at 0.1C and a 109 mAh/g for 1C.

Hanu Arava
Sam Houston State University

Date submitted: 21 Nov 2011 Electronic form version 1.4