

International Conference on

Battery and Fuel Cell Technology

December 08-09, 2016 Dubai, UAE

Synthesis and electrochemical performance of $\text{Na}_2\text{Mo}_2\text{O}_7$ as an anode material for Na-ion battery applications

Rakesh Verma, R K Raman and Varadaraju U V
Indian Institute of Technology-Madras, India

Sodium ion batteries (SIBs) are explored as low cost alternative to the lithium ion batteries (LIBs) in recent times, because of limited geographical localization of lithium, abundant sodium reserve and similar chemistry between sodium and lithium. While much of the efforts are focused on the negative electrode materials, studies on positive electrode materials are few and far between. The main issues encountered with anode materials are a) low capacity in case of insertion type compounds, b) large volume changes in case of both insertion as well as alloying reactions, c) poor cycling performance of conversion type materials and d) sodium plating at low voltages. In the literature, sodium storage in the conversion reaction based systems involving binary and ternary oxides were explored as alternative to the insertion and alloying based compounds. In the present study, $\text{Na}_2\text{Mo}_2\text{O}_7$ was synthesized by solid state reaction route and explored as possible anode material for sodium ion battery, for the first time. The electrochemical reaction with sodium involves an initial insertion of 0.33 Na/fu into the lattice followed by conversion reaction. The detailed synthesis and electrochemical mechanism will be discussed in the presentation.

Biography

Rakesh Verma is currently pursuing his PhD from IIT Madras, Department of Chemistry. He is working on Li and Na-ion battery applications. He has published 2 papers in peer-reviewed journals and presented his work in 3 international and 2 national conferences.

rks.iitm86@gmail.com

Notes: