

Abstract Submitted  
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**Characterization of silicate based cathodes for Li Ion Batteries**

AJAY KUMAR, GHOLAM-ABBAS NAZRI, Wayne State University, MARYAM NAZRI, Applied Sciences Inc., VAMAN NAIL, University of Michigan Dearborn, PREM VAISHNAVA, Kettering University, RATNA NAIK, Wayne State University, ENERGY GROUP COLLABORATION, ENERGY GROUP COLLABORATION, ENERGY GROUP COLLABORATION — The silicate compounds  $\text{Li}_2\text{MSiO}_4$ , where M= Mn, Fe, Co and Ni have gained interest as electrode materials for Lithium ion batteries due to their high theoretical capacity ( $>330\text{mAh/g}$ ), high thermal stability due to strong Si-O covalent bonds, environmental friendliness, and low cost. However, these materials intrinsically have low electrical conductivity. To improve conductivity of these classes of electrode materials, we synthesized  $\text{Li}_2\text{MnSiO}_4$  and  $\text{Li}_2\text{FeSiO}_4$  by solid state reaction in an argon atmosphere. The lithium transition metal silicates were compounded with graphene nano-sheets and the composites were used as positive electrode in a coin cell configuration. . The materials structure-composition, morphology, conductivity and electrochemical performance were characterized by XRD, XPS, SEM, TEM and electrochemical techniques. The detail structure-composition analysis and electrochemical performance of the silicate electrodes will be reported.

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