

Abstract Submitted
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**Synthesis, Characterization and
Electrochemical Analysis of Composite Cathode Material $0.5\text{Li}_2\text{MnO}_3\text{-}0.25\text{LiMn}_2\text{O}_4\text{-}0.25\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ for LIB applications.**¹ MONICA LOPEZ DE VICTORIA, JIFI SHOJAN, LORAIN TORRES, RAJESH KATIYAR, VALERIO DORVILIEN, RAM KATIYAR, University of Puerto Rico — Structural stability, environment friendliness, low cost as well as good electrochemical performances are the major requirements for cathode materials. Li_2MnO_3 based composite cathode materials are one of the widely investigated positive cathode materials due to their ability to provide high discharge capacity and good rate capability. We have synthesized layered- spinel composite cathode material $0.5\text{Li}_2\text{MnO}_3\text{-}0.25\text{LiMn}_2\text{O}_4\text{-}0.25\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ by sol-gel synthesis technique and surface characterized using XRD, Raman, SEM and EDX. Peaks corresponding to layered and spinel structures are identified by XRD and Raman studies. SEM images depict the nano-sized particles and EDX data confirms the presence of constituent transition metals and oxygen. Electrochemical studies were performed on coin cells, which were assembled in the Ar- filled glove box using Li as anode and spread material as cathode. LiPF_6 with EC:DMC::1:2 ratio was used as the electrolyte. CV, EIS and charge discharge studies shows that the developed cathode material is a promising electrode for next generation Li ion batteries.

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