LiNi$_{0.66}$Co$_{0.17}$Mn$_{0.17}$O$_2$ is a promising layered cathode material for lithium-ion batteries. First principles calculations were made to examine the phase stability and the relative formation energy of different compounds, including LiNi$_{0.66}$Co$_{0.17}$Mn$_{0.17}$O$_2$, the most stable after the delithiation process. LiNi$_{0.66}$Co$_{0.17}$Mn$_{0.17}$O$_2$ has been synthesized by sol gel and citric acid methods and the formation of single phase of the material was confirmed by XRD after calcinations at 850°C for 12 hours. The electrochemical behavior of the half cell has been tested using cyclic voltammetry and charge-discharge analysis using a Solatron battery tester. In-situ electrochemical impedance spectroscopy was performed during charge discharge cycles. Capacities as high as 220 mAh g$^{-1}$ were observed. The electrochemical performance with respect to the intensity ratio of (003) and (104) XRD peaks for samples annealed at 800°C, 850°C, and 900°C were studied.

**“In-situ electrochemical analysis of LiNi$_{0.66}$Co$_{0.17}$Mn$_{0.17}$O$_2$ as a layered cathode material for Lithium-ion batteries”: 35th International Conference and Exposition on Advanced Ceramics and Composites (ICACC’11) January 23-28, 2011 in Daytona Beach, Florida (Oral Presentation)**

**“LiNi$_{0.66}$Co$_{0.17}$Mn$_{0.17}$O$_2$ as a Potential Layered Cathode Material for Li-Ion Batteries”: 219th ECS Meeting May 1-6, 2001 in Montreal, Canada (Oral presentation)**