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"In-situ electrochemical analysis of layered cathode materials for Lithium-ion batteries"

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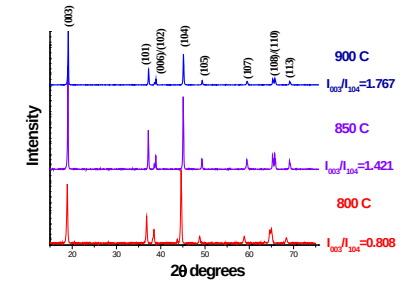
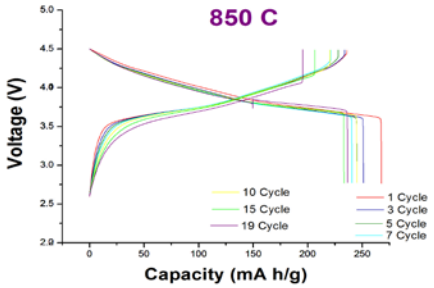
$LiNi_{0.66}Co_{0.17}Mn_{0.17}O_2$ is a promising layered cathode material for lithium-ion batteries. First principles calculations were made to examine the phase stability and the relative formation energy of different compounds, including $LiNi_{0.66}Co_{0.17}Mn_{0.17}O_2$, the most stable after the delithiaton process . $LiNi_{.66}Co_{.17}Mn_{.17}O_2$ 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 850^0C 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 $LiNi_{.66}Co_{.17}Mn_{.17}O_2$ as a layered cathode material for Liithium-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 Montereal, Canada (Oral presentation)**