Contribution ID: **12** Type: **Oral Presentation**

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Tuesday, 4 July 2023 11:00 (20 minutes)

Synthesis of Mn-rich transition metal carbonate precursors as cathode materials for lithium ion batteries: Carbonate co-precipitation method
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Abstract
The synthesis of NMCCO3 precursors for lithium and manganese rich materials was carried out via the co-precipitation method. Co-precipitation method is a widely used process in various applications to carry down by precipitate of substances normally soluble under the conditions employed. For this study, carbonate co-precipitation was used to synthesize our materials using the continuous stirred tank reactor (CSTR). The advantage of using carbonate co-precipitation is that most of the transition metal cations remains in the divalent oxidation state. The intensions of this study were to investigate the electrochemical properties for Mn-rich NMC's. After the synthesis of NMCCO3 precursors, tap density was measured, morphology, particle size distribution and XRD's were determined. A particle size distribution of 9.7 µm was observed, while the morphology shows secondary particles of the material. This findings implies that layered Mn rich LiNMCO2 is so far a good material for cathodes in lithium ion batteries.
Keywords: Tap density, Morphology, Particle size and XRD's.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

PhD

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Session Classification: Physics of Condensed Matter and Materials Track 1

Track Classification: Track A - Physics of Condensed Matter and Materials