



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 intentions 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