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POLYANIONIC CATHODE MATERIALS FOR SODIUM ION BATTERIES

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Sodium ion batteries are emerging to be future energy storage devices replacing its counterpart lithium ion batteries owing to its limited geographical constraint and thereby restricting to meet the global demands. Polyanion (PO_4^{3-} , $\text{P}_2\text{O}_7^{4-}$) based cathode materials for sodium ion batteries are better candidates on grounds of cycle stability, thermal stability, safety, environmental friendliness and cost.

Summary

The NaMnPO_4 exists in olivine and maricite phases with the former being preferable in terms of Na ion conductivity and low temperature formation while the latter is thermodynamically stable at higher temperatures. Given that there are no clear optimized explanations about the appropriate methods to synthesize NaMnPO_4 due to the complicating phase transition phenomena between maricite and olivine phases, we study NaMnPO_4 to optimize a suitable synthesis method taking into account the diffusivity of Na ions through the crystal structure.

Author: Mr MAHARAJAN, Sivarajakumar (University of Fribourg)

Co-authors: Prof. M. FROMM, Katharina (University of Fribourg); Dr KWON, Nam Hee (University of Fribourg)

Presenter: Mr MAHARAJAN, Sivarajakumar (University of Fribourg)

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