Electrochemical and cycling performance of neodymium (Nd3+) doped LiNiPO4 cathode materials for high voltage lithium-ion batteries - DTU Orbit (25/02/2019)

Electrochemical and cycling performance of neodymium (Nd3+) doped LiNiPO4 cathode materials for high voltage lithium-ion batteries

Olivine-type LiNiPO4 and their corresponding Nd3+ doped LiNiPO4 cathode materials were synthesized through polyol process with 1, 2 propane-diol as the medium. The inclusion of Nd3+ to LiNiPO4 significantly enhanced the electronic conductivity by two orders as compared to bare LiNiPO4. The cyclic voltammograms revealed that the rare earth doped LiNiPO4 electrode improved the electrochemical properties. The single cell consisting of 0.07 mol% Nd3+ doped samples showed the highest specific capacity of 95.2 mAh g⁻¹ at low current rate, which makes Nd3+ doped LiNiPO4 a prime candidate for high potential lithium-ion batteries (LIBs).

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