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Preparation and characterization of $Li_{1-3x}Cr_xFePO_4$ cathode materials for lithium ion batteries[1] JESSICA BURK, KENNETH SWATZEL, JACOB HILL, TRAVIS NEELEY, YAMIN CHOWDHURY, HUI FANG, GAN LIANG, Sam Houston State University — Cr-doped $LiFePO_4$ cathode materials have been synthesized by solid-state reaction method and characterized by and specific capacity, synchrotron-based in-situ energy dispersive x-ray diffraction (EDXRD), and x-ray absorption (XAS) measurements. It is found that with the increase of the concentration of the doped-Cr, the specific capacity decreases. The specific capacity decreases with increasing charge/discharge rate. XAS result shows that Cr in the cathode materials is in trivalent state. The in-situ EDXRD measurement on Cr-doped $LiFePO_4$ coin cell batteries shows that EDXRD is an excellent technique for studying internal layer structure and chemical reactions in Li-ion batteries with thick metallic walls.

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