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In Situ Tomographic Profiling of $Ag_2VP_2O_8$ Li-Ion Batteries using Energy Dispersive X-ray Diffraction[1] KEVIN KIRSHENBAUM, Brookhaven National Laboratory; Stony Brook University, Dept. of Chemistry, DAVID BOCK, Stony Brook University, Dept. of Chemistry, AMY MARSCHILOK, Stony Brook University, Dept. of Chemistry; Stony Brook University, Dept. of Materials Science, ZHONG ZHONG, Brookhaven National Laboratory, KENNETH TAKEUCHI, Stony Brook University, Dept. of Chemistry; Stony Brook University, Dept. of Materials Science, ESTHER TAKEUCHI, Brookhaven National Laboratory; Stony Brook University, Dept. of Chemistry; Stony Brook University, Dept. of Materials Science — Bimetallic cathodes for use in Li-ion batteries have been studied in recent years as they may provide multiple electron reduction, yielding both high capacity and high current on discharge. In this study, we investigate the progress of the reaction of $Ag_2VP_2O_8$ on discharge in a lithium anode cell using in-situ energy dispersive x-ray diffraction at beamline X17B1 at NSLS I. By measuring diffraction patterns in 20 μm segments through the cathode as a function of depth of discharge we are able to produce tomographic images of discharged cells. After analyzing the resulting spectra, we were able to observe the presence and relative intensity of Ag metal formed in the cathode upon discharge shedding light on the mechanisms limiting performance.

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