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Structural and electrochromic properties of $Fe_2(SO_4)_3$ nanostructures prepared by template assisted method M.B. SAHANA, SUDAKAR CHANDRAN, RATNA NAIK, Department of Physics and Astronomy, Wayne State University, Detroit, MI 48201, VAMAN NAIK, Department of Natural Sciences, University of Michigan-Dearborn, Dearborn, MI 48128 — Oxides containing polyanions such as XO_4^{2-} (X = S, Mo, P and W) as lithium insertion hosts are promising cathode materials due to their high thermal stability. However, the larger separation of the transition metal ions can be expected to reduce the electron mobility. As observed in $LiFePO_4$, this can be overcome either by coating the cathode materials with carbon or by decreasing the particle size. We have prepared nanowires of NASICON type structure and platelets of monoclinic $Fe_2(SO_4)_3$ by template assisted electro deposition. These structures were grown on stainless steel substrates and are characterized by XPS, HRTEM, and XRD analysis. Both NASICON and monoclinic $Fe_2(SO_4)_3$ structures are very porous and are comprised of nanoparticles leading to a high lithium insertion capacity.

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