

Abstract Submitted
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Synthesis, structure and electrical properties of a strontium manganese vanadate QIFAN YUAN, R.L. KALLAHER, V. SOGHOMONIAN, Virginia Tech — Metal oxide frameworks offer materials opportunities in electrical energy storage and conversion applications. We present synthesis, structural and physical characterization, as well as electrical properties of a strontium manganese vanadate framework. Dark rectangular plates are isolated from hydrothermal reactions. The vanadate crystallizes in the monoclinic space group $C2/m$. The structure consists of octahedral manganese sites connected to each other through vanadate tetrahedral units, forming manganese vanadate layers. The layers are in turn connected to each other through octahedral strontium sites. Within the manganese vanadate layers, multiple oxidation states are present for the transition metal sites. Single crystals were contacted, and four point conductivity measurements obtained as a function of temperature. The electronic conductivity for manganese vanadate framework ranges from, dependent on crystal direction, $2 \times 10^{-6} \Omega^{-1} \text{ cm}^{-1}$ to $7 \times 10^{-7} \Omega^{-1} \text{ cm}^{-1}$. The conductivity within the manganese vanadate planes is greater than the conductivity between planes, as expected. Preliminary results intercalating ions into the framework show potential for charge storage in the material. We acknowledge partial support from NSF DMR-0943971.

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