Abstract Submitted
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Low temperature Electrical and Magnetic studies of Nsutite JOHN DISTIN, PAUL YENO, PETER LEMAIRE, Department of Physics and Earth Sciences, Central Connecticut State University, New Britain CT 06050, MELINDA MCNALLY, KELSEY COOLAHAN, Department of Chemistry and BioChemistry, Rowan University, Glassboro NJ 08028 — Nsutite is a naturally occurring Manganese Oxide of the composition $Mn^{4+}_{1-x}Mn^{2+}_{x}O_{2-2x}(OH)_{2x}$ where x = 0.06 – 0.07. D.C. electrical transport measurements were carried out on samples from Nsuta, Ghana between 40 K and 400 K. Non-linear I-V curves were observed below 140 K even at very low currents. The resistivity vs. temperature data suggests electron transport is by the variable range hopping mechanism between 140 K and 400 K. Magnetic moment vs. temperature data were obtained between 5K and 300K at high field (10,000 Oe) and low field (1,000 Oe). Both high and low field data suggest paramagnetic behavior with a possible Neel temperature at about 15K, below which the materials exhibits antiferromagnetic behavior. The electrical and magnetic properties as well as high temperature thermal analysis (DSC) data will be discussed.

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