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Abstract Submitted
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Evidence of Phase Transitions in MoO_2 single crystals[1] MARIO DA LUZ, Universidade Federal do Tringulo Mineiro, LEANDRO ALVES, FELIPE OLIVEIRA, BRUNO LIMA, CARLOS DOS SANTOS, Universidade de So Paulo, A. REBELLO, SUELI MASUNAGA, JOHN NEUMEIER, Montana State University, JUSCELINO LEO, Center for Neutron Research, NIST, CARLOS GILES, Instituto de Fsica Gleb Wataghin, UNICAMP — In this work, physical and structural properties are revisited in the MoO_2 compound. MoO_2 single crystals were grown by chemical vapor transport. Heat capacity and electrical resistance as a function of temperature were performed using a 9 T cryo-free Physical Properties Measurement System (PPMS). Thermal expansion (TE) was measured using a high-resolution capacitive dilatometer cell constructed from fused quartz. High-resolution Synchrotron x-ray powder diffraction was measured using a Shimazu diffractometer (XRD 6000) at several temperatures in the Brazilian Synchrotron Light Laboratory. Furthermore, Neutron powder diffraction data were collected using the BT-1 32 detector neutron powder diffractometer at the NIST. Electrical resistivity, heat capacity, and TE measurements show two clear features near 220 K and 267 K suggesting two phase transitions in MoO_2 compound. The transition at ˜267 K has been related to a structural phase transition by high resolution synchrotron x-ray diffratometry measurements. Low temperature neutron diffraction measurements suggest that the phase transition near 220 K is electronic or magnetic in nature.

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