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Anomaly in the Metal-to-Insulator Transition of V_2O_3 Thin Films Under Pressure[1] ILYA VALMIANSKI, GABRIEL RAMIREZ, SIMING WANG, CHRISTIAN URBAN, Univ of California - San Diego, XAVIER BATTLE, University of Barcelona, IVAN K. SCHULLER, Univ of California - San Diego, CENTER FOR ADVANCED NANOSCIENCE TEAM, GROUP OF MAGNETIC NANOMATERIALS TEAM — We present results of electrical transport measurements in highly textured V_2O_3 thin films of varying thickness under hydrostatic pressure from 100 kPa to 1.6 GPa. All films presented $\sim$ 4 orders of magnitude resistance change at the Metal-to-Insulator Transition (MIT). Morphological and structural characterization was performed using in- and out-of-plane X-ray diffractometry and Atomic Force Microscopy before and after pressurization. We found an anomalous pressure dependence of the MIT for pressures above 500 MPa that deviates from the bulk behavior. Furthermore, we found an irreversible change in the MIT temperature, which coincides with a morphological but not crystal structure change in the film. The obtained anomalous pressure dependence suggests a difference between bulk and thin film MIT mechanisms.

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Ilya Valmianski
Univ of California - San Diego

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