

Abstract Submitted
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Metal-to-Insulator Transition in Vanadium Dioxide Thin Films

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Brigham Young University — Vanadium Dioxide single crystals undergo a structural first-order metal to insulator phase transition at approximately 68 degrees Celsius. This phase transition exhibits a resistivity change of up to 5 orders of magnitude in bulk specimens. We observe this structural phase transition in thin films of vanadium dioxide, however, the phase transition observed exhibits only a 2-3 order of magnitude change. We present our current progress in understanding this phase transition for polycrystalline thin films of vanadium dioxide from the view of individual particles. Particle sizes ranging 50 to 250 nm were studied by means of electron microscopy. The results of these studies, as well as some of the implications that these findings may have in incorporating this material onto electronic devices will be presented.

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