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Optical Properties of Vanadium Dioxide Films DANA RAMPINI, LOGAN SUTTIN, JOSHUA LAUZIER, JOSE DE LA VENTA, Colorado State Univ — The temperature dependence of reflectivity, transmission, and absorption of vanadium dioxide films were studied. Vanadium dioxide (VO_2) undergoes a temperature induced metal to insulator transition (MIT) at 340K, from a monoclinic insulator to a rutile metal. In this work, different thicknesses of vanadium dioxide deposited on Au and Al_2 O_3 substrates were studied; the optical properties of the films were measured at three different wavelengths in the visible to near-infrared range. The thickness of the vanadium dioxide layer and type of substrate used were the main parameters shown to tune the behavior of the optical properties and the change across the phase transition. For certain wavelengths, the change in measured intensity through the VO_2 transition is reversed. These findings suggest that the optical properties of vanadium dioxide films can be tuned with substrate choice and the thickness of the film.

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