Abstract Submitted
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The metal-insulator transition in vanadium dioxide explored by optical methods M.M. QAZILBASH, K.S. BURCH, D.N. BASOV, University of California - San Diego, B.G. CHAE, H.T. KIM, Basic Research Lab, ETRI, Daejeon, Korea — The nature of the metal-insulator transition (MIT) in vanadium dioxide (VO_2) remains a matter of debate. At the center of the debate is the relative importance of electron-electron correlations to the MIT. We study the MIT with spectroscopic ellipsometry on VO_2 films grown on sapphire substrates, and determine the optical constants in the insulating and metallic states from 50 meV to 5.5 eV. The changes in the optical constants with temperature in the metallic state have been tracked from 360 K up to 500 K. The redistribution of spectral weight in the real part of the optical conductivity as a result of the MIT will be discussed with emphasis on the changes to the interband transitions. This work has been supported by Department of Energy Grant No.DE-FG03-00ER45799.

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