MULTIPLEXED MODR WITH APPLICATIONS TO THE ELECTRONIC SPECTRUM OF SO_2

G. BARRATT PARK and ROBERT W. FIELD, *Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA 02139*; ANDREW R. WHITEHILL and SHUHEI ONO, *Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139*.

Application of broadband chirped-pulse technology to Microwave-Optical Double Resonance (MODR) allows simultaneous acquisition of MODR spectra for multiple microwave transitions. This new multiplexed implementation of MODR is capable of resolving and rotationally assigning complicated and congested spectral regions with a single laser scan and serves as a powerful complement to Laser Induced Fluorescence. Applications to the spectroscopy of SO_2 will be presented. The photolysis of SO_2 has been the subject of extensive study and has been invoked as an important mechanism for mass-independent fractionation of sulfur isotopes in the Precambrian atmosphere. Multiplexed MODR has enabled new assignments in congested and perturbed regions of the spectrum that were previously unassignable.