

MULTIPLEXED MODR WITH APPLICATIONS TO THE ELECTRONIC SPECTRUM OF SO₂

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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 SO₂ will be presented. The photolysis of SO₂ 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.