INFRARED SPECTRA OF NEUTRAL AND IONIC SO_2H_2 SPECIES TRAPPED IN SOLID NEON

MARILYN E. JACOX AND WARREN E. THOMPSON, *Optical Technology Division, National Institute of Standards and Technology, Gaithersburg, MD 20899-8441*.

When a Ne:H_2:SO_2 = 600:10:1 mixture was codeposited at 4.2 K with a beam of neon atoms that had been excited in a microwave discharge, the infrared spectrum of the resulting solid included new absorptions contributed by isomers of $S(OH)_2$ and of its cation. In other experiments in which the neon atoms were not excited in a discharge but in which the SO_2 was excited by 254 nm radiation, isomers of uncharged $S(OH)_2$ and of HS(O)OH appeared. Isotopic substitution studies and density functional calculations support the infrared identifications.