INFRARED STUDY OF THE WATER-HYDROXYL RADICAL COMPLEX TRAPPED IN SOLID NEON

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

The most prominent infrared absorptions which appear when a Ne:O_2 mixture is codeposited at 4.3 K with a Ne:H_2 mixture that has been passed through a microwave discharge are those of H_2O, HO_2, the HOHOH anion, and the H_2O(HO) complex. The absorptions of this complex correspond well with those previously obtained in argon-matrix experiments [a]. Photodetachment of the HOHOH anion leads to extremely great intensification of the absorptions of the H_2O(HO) complex. The infrared spectra of the normal and deuterium-substituted complex and the mechanisms of formation and photodestruction of the HOHOH anion will be considered.

[a] A. Engdahl, G. Karlström, and B. Nelander, J. Chem. Phys. 118, 7797 (2003).