COMBINATION BANDS BETWEEN 2900 AND 3600 CM$^{-1}$ OF CYCLIC O$_4^+$ CATION 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 infrared spectrum of cyc-O$_4^+$ trapped in solid neon includes a group of combination bands built on ($\nu_1 + \nu_2$) of ground-state cyc-O$_4^+$. Each peak lies close to a counterpart previously reported$^a$ in a study of the infrared laser photodissociation spectroscopy of a mass-selected molecular beam. This agreement is consistent with the vibrational assignment of three low-frequency modes of cyc-O$_4^+$ that was proposed in the earlier study. The spectra obtained for the isotopologues formed by the substitution of one or two $^{18}$O moieties suggest the occurrence of interaction with a nearby excited electronic state.