COMBINATION BANDS BETWEEN 2900 AND 3600 CM^{-1} OF CYCLIC O_4 CATION TRAPPED IN SOLID NEON

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The infrared spectrum of cyc-$O_4{}^+$ trapped in solid neon includes a group of combination bands built on (ν_1 + ν_5) 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 $^{18}O_2$ moieties suggest the occurrence of interaction with a nearby excited electronic state.

[a] A. M. Ricks, G. E. Douberly, and M. A. Duncan, Int. J. Mass Spectrom. 283, 69 (2009).