INFRARED SPECTROSCOPY OF THE INTERACTION OF O_2 WITH NO TRAPPED IN SOLID NEON

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When O_2 trapped in solid neon at 4.3 K in sites adjacent to an NO molecule is excited by 240 to 420 nm radiation, NO_3 is stabilized. Photoexcitation of NO_3 to its 663-nm state, which has $^2E'$ symmetry, leads to the re-formation of weakly interacting $(O_2)(NO)$ pairs trapped in solid neon. In addition to infrared absorptions near the gas-phase band centers of NO and O_2, the weakly bound complex shows several absorptions at lower frequencies. Experiments in which either the O_2 or the NO moiety of the initial sample deposit is enriched in O-18 show O-isotopic randomization of the complex which results from photodestruction of the NO_3 product.