INFRARED SPECTROSCOPY AND PHOTOCHEMISTRY OF $NCCN^+$ AND $CNCN^+$ TRAPPED IN SOLID NEON

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When a very dilute mixture of NCCN in neon is codeposited at 4.3 K with a beam of neon atoms that have been excited in a microwave discharge, prominent infrared absorptions of the uncharged isomers CNCN and CNNC appear in the resulting solid. The ν_3 absorption of $NCCN^+$ is also very prominent, and the ground-state $\nu_1 + \nu_3$ absorption of that product is observed for the first time. Photoisomerization to $CNCN^+$, for which the two CN-stretching fundamentals are identified, occurs in the red spectral region, and photodestruction of both $NCCN^+$ and $CNCN^+$ occurs in the near ultraviolet. The photochemistry of these two cations is correlated with recently published results of experimental and quantum chemical studies of their electronic energy levels.