ABSORPTION SPECTROCOPY OF $\Sigma 0_0 \rightarrow \Pi 1_0$ BAND IN Rg·ND_3 (Rg = Ne, Ar, Kr)

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Previously, we have reported the $\Sigma 0_0 \rightarrow \Pi 1_0$ vibrational-tunneling-rotational (VTR) transition in the Ar·ND_3 complex.[a] Here we report the first observation of the corresponding transition in in the Ne·ND_3 and Kr·ND_3 complexes using a pulsed jet FASSST spectrometer operating in the 195-298 GHz region. The inversion components of the VTR band corresponding to different nuclear spin states, are observed for all complexes Rg·ND_3 (Rg = Ne, Ar, Kr). The experimental data were fit to a pseudo-diatomic Hamiltonian,[b] yielding molecular constants, including the value of the inversion splitting, Δ, in the complexes. A semiquantitative model of the (moderate) quenching of the inversion splitting in the complex is proposed.

[a] D.Melnik, S.Gopalakrishnan, T.A.Miller, and F.C.De Lucia, 54th International Symposium on Molecular Spectroscopy

[b] Y. Xu and A. R. W. McKellar, Mol.Physics 88, 859 (1996)