

INFRARED ABSORPTIONS OF THE H₂O—H₂ COMPLEX TRAPPED IN SOLID NEON

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The infrared spectrum of a mixture of H₂O and H₂ with a large excess of neon which has been deposited at 4.2 K includes several new absorptions which can be assigned to the H₂O—H₂ van der Waals complex. The H—H stretching vibration of the H₂ moiety is detectable even for very dilute concentrations of the complex. Small shifts in the position of the OH-stretching absorptions associated with vibrotational transitions of the H₂O moiety also are observed. The intensities of absorptions arising from nonrotating H₂O are considerably enhanced for the complex. Studies of samples enriched in D₂O and in D₂ give similar results. Since HD, unlike H₂ and D₂, is readily thermally depopulated to its J = 0 rotational state, this observation is consistent with the stabilization principally of the complex between H₂O and H₂ or D₂ in its J = 1 rotational state.