HELIUM DROPLET SPECTROSCOPY AS A TOOL FOR EXPLORING MOLECULAR AGGREGATION: VAN DER WAALS COMPLEXES OF HF WITH MULTIPLE H_2 MOLECULES, PURE ORTHO-, PURE PARA- AND MIXED COMPLEXES

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Pendular spectra of HF-(o-H_2)n(p-H_2)m [n,m=0,6] van der Waals complexes in liquid helium droplets have been recorded. The compositions of the different complexes were determined by comparing pendular spectra taken with normal and para-enriched hydrogen. Field-free, rotationally resolved spectra were also obtained for the (n,m)=(0,2), (1,1) and (2,0) complexes. The results have been used to draw inferences about the relative aggregation behaviors of ortho- and para-H_2 with HF.