MOLECULAR HYDROGEN COMPLEXATION WITH POLYCYCLIC AROMATIC HYDROCARBONS

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There is speculation about the role that polycyclic aromatic hydrocarbons (PAHs) play in the generation of molecular hydrogen in the interstellar medium (ISM). As gas phase reactions cannot explain the rate of formation of H_2 in the ISM, the community is looking to grain surface interactions. On these surfaces, H atoms would interact with PAHs through either physisorption or chemisorption. Upon contact with another H atom, molecular hydrogen would be formed and released. We aim to study the interaction H_2 would have with a PAH by using rotational spectroscopy to investigate the structure of these complexes. Two PAHs, acenaphthene and fluorene, have been complexed with H_2, D_2, and HD in order to accurately determine the structure of the van der Waals complexes formed.