

INFRARED SPECTRA OF HYDROGENATED AMORPHOUS CARBON (HAC) AND PARTIALLY HYDROGENATED FULLERENES (PHFs)

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In recent years, interest has developed in studying infrared emission spectra of the circumstellar envelopes of post asymptotic giant branch (AGB) stars and proto-planetary nebulae. Far-infrared spectra of these interstellar phenomena contain a mysterious wide-band feature centred at 20.2 microns ($\sim 494 \text{ cm}^{-1}$). From observations, it has been speculated that the source of the feature is a large complex carbonaceous molecule or solid. Two candidates which have similar characteristic IR absorption bands near or centred at 21-microns have been studied in great detail; hydrogenated amorphous carbon (HAC) molecules (W.W. Duley et al. 1997) and partially hydrogenated fullerenes (PHFs). Absorption spectra of HAC and PHFs have been obtained from $0\text{-}4000 \text{ cm}^{-1}$, and the experimental results will be presented.