

## **The nature of circumstellar hydrocarbons**

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Carbon-rich dust evolves from amorphous carbon on the asymptotic giant branch (AGB) to polycyclic aromatic hydrocarbons (PAHs) in planetary nebulae (PNe) and in the interstellar medium. Studying what happens between these endpoints can improve our knowledge of the structure of the dust and how it interacts with radiation fields and photo-processing. Using a sample of infrared spectra from carbon-rich post-AGB objects in the Magellanic Clouds, we find evidence that hydrogenated amorphous carbon (HAC) is a key step in the evolution of carbonaceous dust. Spectra with the enigmatic 21- $\mu\text{m}$  dust feature show several other features, including one at 15.8  $\mu\text{m}$  which we identify with processed aliphatics, as well as aliphatic features at other wavelengths. The newly identified Class D PAH spectrum is also common in carbon-rich post-AGB objects. Our sample reveals two distinct flavors of this spectrum, one of which is associated with aliphatics and the 21- $\mu\text{m}$  feature. The presence of fullerenes in our post-AGB sample indicates the degree of photo-processing experienced by hydrocarbons in circumstellar environments.