

Carbon-Rich Dust in Evolved Stars: from AGB, Post-AGB to Planetary Nebulae

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Carbon-rich dust generated by evolved stars can take many forms in circumstellar and interstellar environments. In the outflows from stars on the asymptotic giant branch (AGB), amorphous carbon dominates, but tracers like carbides and sulfides form as well, most notably SiC and MgS. The behavior of these dust species is consistent with layered grain structures. Dust in post-AGB objects and planetary nebulae (PNe) can take even more exotic forms: polycyclic aromatic hydrocarbons (PAHs), aliphatic hydrocarbons, and fullerenes. Photo-processing appears to play a dominant role in determining which carbonaceous species we see in different post-AGB environments, but it is likely that the story is more complex.