# Classification of Dust Emission Features in Carbon Stars

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We have cross-referenced the IRAS PSC with the GCVS, searching for AGB carbon stars, and found 99 sources brighter than 28 Jy at 12 $\mu$m. We have classified their LRS spectra after removing an estimated stellar contribution. The majority of our sources fall into two categories: spectra with the classic SiC emission feature peaking around 11.2−11.5 $\mu$m (class SiC), and spectra where the SiC feature appears along with an additional component peaking around 8.5–9.0 $\mu$m (class SiC+). In a few stars the 8.5−9 $\mu$m feature rivals or exceeds the SiC feature in strength (class SiC++). Our sample also contains several unusual and low-contrast dust spectra which are difficult to classify. The classic SiC class contains mostly Mira variables, while the SiC+ and SiC++ classes contain mostly SRs and Lbs. Classic SiC sources tend to have redder [12]−[25] colors, correspondingly lower photospheric temperatures, and longer periods than SiC+ and SiC++ sources. The SiC feature appears to be superimposed on a featureless continuum most likely due to amorphous carbon or graphitic material. The C/O ratio increases along the sequence SiC → SiC+ → SiC++ from an average of 1.07 (SiC) to 1.2 (SiC+) to 1.3 (SiC++). If *a*:C−H is the carrier of the 8−9 $\mu$m feature (Goebel et al. 1995, *ApJ*, 449, 246), we suggest that this feature will strengthen with increasing C/O ratio. We find support for this suggestion in the increasing strength of the $C_2H_2$+HCN absorption feature seen in the 13−15 $\mu$m region and in the spectrum of VX And, which has the strongest 8–9 $\mu$m feature and the largest C/O ratio (1.76).

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