THE 8-22μm EXCESS IN CARBON STARS FROM IRAS LRS SPECTRA

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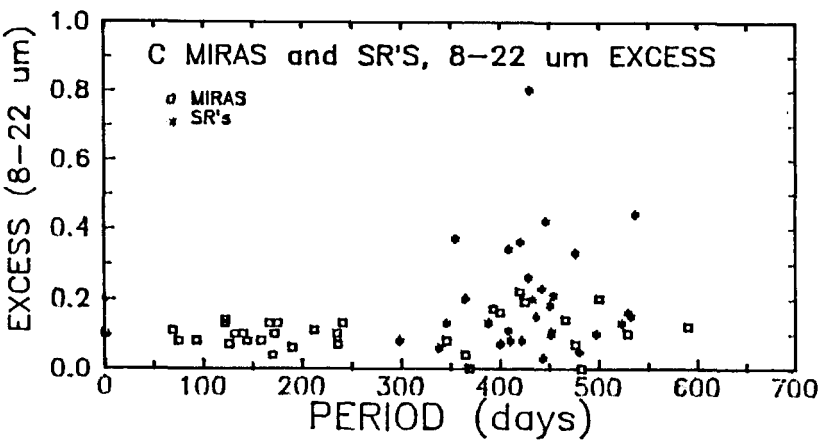
We have measured the excess IR emission from carbon mira and SR variable stars from IRAS LRS spectra. The 8-22μm excess is defined as the ratio of flux above a 2500K energy distribution fit to the LRS spectrum at about 8μm. The carbon star LRS spectra show both emission and absorption features, which are incorporated into our 8-22μm excess. The most prominent feature in carbon stars is the 11.2μm SiC dust emission feature extending from 10μm to 13.8μm. We observe another emission feature of unknown origin which peaks between 8.4-8.7μm. The SiC emission feature is occasionally blended on the red side by an absorption feature (attributed to gaseous HCN + C_2H_2) which extends from about 12-16μm. Many of the spectra appear to turn down at the 8μm end due (?) to an HCN + C_2H_2 absorption feature located at 7.1μm. Carbon stars do not generally show as large an excess as the M mira variables do. The figure below shows our measured excesses for both carbon miras and carbon semi-regular variables. There appears to be little correlation of excess with period, however the mira variables show about twice the range of variation of excess that the semi-regular variables do. We find little correlation between our measured 8-22μm excess and the excesses of Jura (Ap. J., 303, 327, 1986) based on the ratio of 12μm flux to 2μm flux. Our data do support his conclusion that longer period variable stars show larger average excesses, but this is only true for mira variables in our analysis.



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