

Observations and Models for Red Giants with Unusual Dust

Ian Griffin C.J. Skinner
Dept. Physics & Astronomy
University College London
Gower Street
London WC1E 6BT

B.R. Whitmore
School Mathematical Science
Queen Mary College
Mile End Road
London E1 4NS

We present near IR (H,K and L band) medium resolution ($\lambda/\Delta\lambda \approx 600$) spectra for a selection of 9 red giants which have previously been shown to exhibit anomalous dust emission as characterised by their IRAS LRS spectra. The objects observed (during UKIRT and AAT service time) include Carbon stars whose LRS spectra show the $9.7\mu\text{m}$ silicate feature and also M stars whose LRS spectra display an $11.3\mu\text{m}$ feature similar to that usually associated with emission from SiC dust grains.

Spectral classifications derived from our observations are, in all cases, in agreement with those derived for the same stars from optical spectra. This is shown to present some problems for a mooted binary model for these objects.

We present further evidence indicative that these objects are single stars by comparing the IRAS observations with models calculated using a comprehensive radiative transfer code that utilizes optical constants for silicate and SiC dust grains derived from the literature. Early models are suggestive that the amount of dust required to fit the observed silicate profiles does not necessarily produce enough optical depth at near IR wavelengths to obscure any reasonably luminous companion.