3.0 TO 3.5 MICRON SPECTRUM OF V348 SGR AND R CrB

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1. INTRODUCTION

The circumstellar dust in R CrB stars is often thought to be due to graphite, because of the high carbon abundance in the stars. Further, the spectra of these stars in the infrared show featureless smooth continuum (Forrest 1974, Roche and Aitken 1984) which was also thought to be characteristic of graphite. However, the recent comparison of the ultraviolet spectra obtained at maximum and minimum light of R CrB showed an extinction peak in the region of 2400 to 2500A (Holm, Wu & Doherty 1982, Hecht et al. 1984) which was identified as due to amorphous or glassy carbon particles. According to Duley and Williams (1981,83) amorphous carbon is supposed to show spectral features in the 3.3-3.4 μm region. Further many dust emission features are also supposed to appear in the spectral region 3 to 3.5 μm (Aikten 1981). The previous studies in this spectral region in R CrB (Forrest 1974) and in the hotter star V348 Sgr (Allen et al. 1982) showed smooth continuum. V348 Sgr shows spectroscopically many similarities with other WC 11 stars and was grouped with CPD-56°8032, He 2-113 and M4-18 (Webster and Glass 1974). All these three stars show strong dust emission features at 3.3, 8.6 11.25 μm. With a view to search for weaker dust spectral features we obtained the spectrum of R CrB and V348 Sgr with higher resolution than employed before.

2. OBSERVATIONS

The observations were obtained on 1985 July 21, with the 3.8 meter U.K infrared telescope at Mauna Kea using the 7-channel cooled grating Spectrometer CGS 11 (Wade 1983). The resolution is $\lambda/\Delta\lambda \simeq 350$. The entrance aperture used corresponds to 5.4 arc sec. The data points were spaced every half-width of each detector (the spectrum is over sampled by a factor of two). The standard stars BS 6863 and BS 6063 were observed for atmospheric corrections before and after the observations of V348 Sgr & R CrB respectively. Figs. 1a and 1b show the spectrum of V348 Sgr relative to BS 6863 and Fig.1c shows the ratio of BS 6863-2 over-1. These observations were obtained when the star was at maximum. There is an indication

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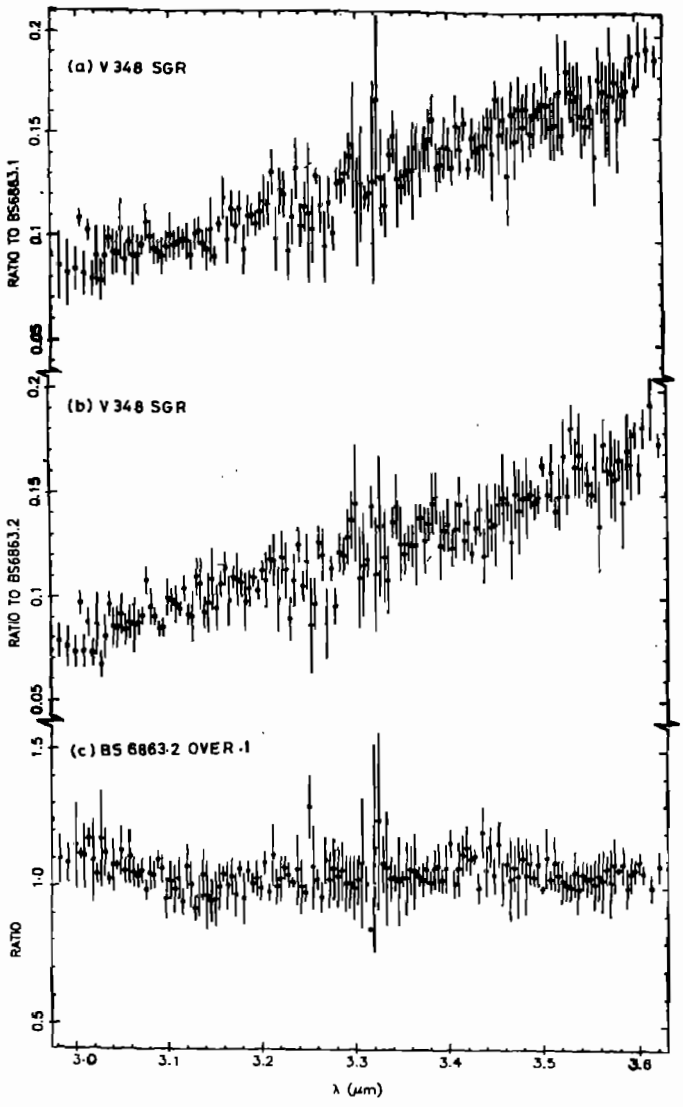

Fig. 1(a): Spectrum of V 348 Sgr relative to BS 6863-1. (b) Spectrum of V 348 Sgr relative to BS 6863-2. (c) Spectrum of BS 6863-1 relative to BS 6863-2.

of the presence of weak emission at 3.3 μ m in V348 Sgr whereas the spectrum of R CrB (Fig.2) shows a smooth featureless spectrum. Further observations of V348 Sgr are being planned to confirm the 3.3 μ m emission. Observations of these stars at the time of infrared minimum would be useful for detection of the spectral features.

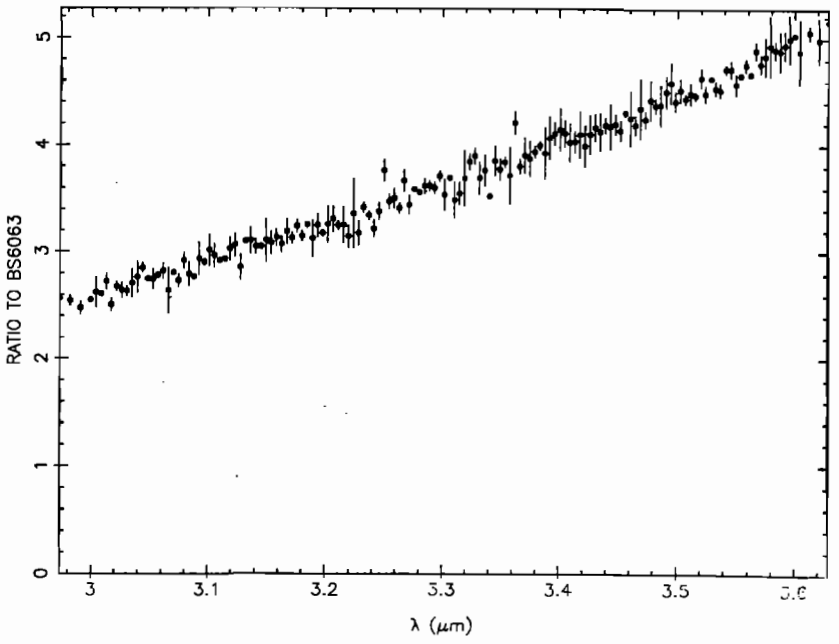

Fig. 2. Spectrum of R CrB relative to the standard star BS 6063.

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