

Dust Formation around Luminous Evolved Main Sequence Stars

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Classical Be stars are hot main-sequence stars rotating near critical speed. In addition to the emission lines in their spectra, they are also characterized by infrared radiation in excess to their photospheric emission, usually attributed to the plasma free-free process. A few with exceptionally large infrared excess, namely with the observed (J-H), and (H-K) both greater than 0.6 mag, however, must be accounted for by thermal emission from circumstellar dust. We propose that these stars are on the verge of turning off the main sequence, so should have depleted any remnant dust from the parental molecular cloud out of which the stars are formed. If so, the grains --- likely distributed in flattened, expanding envelopes because of the fast rotation --- are freshly condensed and can be tiny in size, which are efficient emitters to reprocess the starlight to produce the infrared excess.