

Heterogeneous Condensation of Core-Mantle Presolar Grains in Carbon-rich AGB stars

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We investigate formation conditions of the presolar TiC core-graphite mantle grains observed in the Murchison meteorite for gas outflows from carbon-rich AGB stars taking into account of heterogeneous nucleation and growth. It is shown that stellar environment allowed to reproduce the observed characteristics of the presolar TiC core graphite-mantle grains is wider than that required by Chigai et al. (1999, *Astrophysical Journal* 510, 999).

Formation conditions of the presolar TiC core-graphite mantle grains observed in the Murchison meteorite are investigated for the gas outflows from carbon-rich AGB stars taking into account of the heterogeneous condensation involving chemical reactions in nucleation and grain growth. The formation conditions are derived for realizing the TiC core - graphite mantle structure, the observed sizes of the TiC cores and graphite mantles, and the observed size ratio of the TiC core-graphite mantle grains. It is shown that stellar environment allowed to reproduce the observed characteristics of the observed presolar grains is wider than that required by Chigai et al. (1999, *Astrophysical Journal* 510, 999).