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Constraints on the Identification of the $22\ \mu\text{m}$ Emission Feature

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A broad $22\ \mu\text{m}$ emission feature has recently been observed in HII regions and starburst galaxies (Chan and Onaka, 2000, *Ap.J.*, **533**, L33). The feature shape is similar to that of the $22\ \mu\text{m}$ emission feature of newly synthesized dust observed in the Cas A supernova remnant (Arendt et al., 1999, *Ap.J.*, **521**, 234). This finding suggests that both of the features are arising from the same carrier and that supernovae are probably the dominant production sources of this new interstellar grain. Identification of the carrier of the feature is not definite and several candidates (Mg protosilicates, Fe protosilicates, and FeO) can each provide a good spectral fit to the feature. We have derived the dust temperature and determined the amount of the materials above mentioned in the environments where the feature was observed. We apply these physical and chemical constraints on the identification of the carrier. Initial results will be discussed.