

# CRYSTALLINE SILICATES: NEW PROBES FOR CIRCUMSTELLAR DUST CONDITIONS

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In the pre-ISO period it was thought that only amorphous silicates were formed in the outflows of evolved stars. ISO revealed the presence of crystalline silicates around evolved stars. In the most extreme case about 75% of the dust has a crystalline structure. The low temperature of the crystalline silicates hampered the detection of these silicates before the wavelength range above 20  $\mu\text{m}$  was opened by ISO for spectroscopy. An important question that arised, is whether the crystalline silicates were related to the mass loss history of these stars or not. We therefore investigated different stars, with crystalline silicate features. Since the solid state features of crystalline silicates are rather sharp, the different dust species are more easy to distinguish from eachother than for amorphous dust.

We will show that most of the solid state features found can be explained with the magnesium rich endmembers of the olivines and pyroxenes, i.e. forsterite and enstatite. Besides the identification of many peaks there still remain features for which identification is lacking. The presence and strength of the olivines and pyroxenes have been related to other known parameters of the sample stars. An important relation that will be discussed is the crystallinity of the dust and the presence of a (stable) disk around the star. Also the olivine over pyroxene ratio seem to be higher for the disk sources.