

## Variations of IR Spectra in carbon-rich Mira variable, T Dra

Hyun-Il Sung<sup>1,2</sup>, Sang-Gak Lee<sup>2</sup>

<sup>1</sup>*Korea Astronomy Observatory*

<sup>2</sup>*Astronomy Program, School of Earth and Environmental Sciences,  
Seoul National University*

We have studied variations of physical parameters in the circumstellar envelope of carbon-rich Mira variable, T Dra, at different pulsation phases. After comparing the ISO/SWS spectra of T Dra with spectral energy distributions calculated in models, we could find the best fitted parameters for the physical state of the dust envelope at each phase. The variations of parameters, effective temperature, fraction of SiC grains, mass loss rates and inner radius of shell are found to have nearly the same trend as that of light curve. The other parameters, grain size, optical depth, radius of central star and dust temperature at the inner boundary of envelope, are inversely varying to the light curve. We have found that most physical parameters vary within factor 2, while mass loss rate varies more than factor 3 during pulsation period.