

[구IM-03] **The mid-IR PAH emission of planetary nebulae**

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We present the spatially resolved spectra of the Red Rectangle in 7 - 13 μm wavelength range. The study of PAH emission is important to understand the formation/destruction and evolution of the ISM as organic species and an intermediate size from molecules to small carbon-rich dust particles as well as definite identification of the ubiquitous infrared emissions. The spectra have obtained from MICHELLE on UKIRT in both low- ($R\sim 200$) and medium-resolution ($R\sim 1000$). The results are that the band positions of the 7.7, 8.6 and 11.3 μm move towards shorter wavelength as a function of distance from the illuminating objects to the nebula. Medium-resolution spectra reveal interesting variation of the '7.7' μm composition which consists of 7.6 and 7.8 μm band and new appearance of minor features upon major 11.3 μm emission. It could be interpreted as carrier changes under the variation of physical conditions and the possible carrier candidates are discussed.

[구IM-04] **Near-Infrared Polarization images of the Herbig-Haro objects HH 1 and HH 2**

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We present deep JHKs imaging polarimetry of a $\sim 7.7' \times 7.7'$ area of the Herbig-Haro objects HH 1 and HH 2. This system was the first example of this class of objects reported. The large diverging proper motions of the Herbig-Haro 1-2 system imply that the energy source of these HH objects is located somewhere between them. We obtained imaging polarimetry data in J, H, and Ks bands using SIRPOL on the 1.4m Infrared Survey Facility (IRSF) telescope in South Africa.

In this presentation, we present the scattering emission which shows the geometry of the illuminating source. We also measured the dichroic polarization of the background stars which is affected by the alignment of the foreground dust. The polarization degrees are as high as 8% around the Herbig-Haro 1-2 system. The polarization angles are about 110 degrees which is not aligned in the outflow direction (NW-SE) from the central source.