[포IM-08] PDR Model : Test and fit observed data Obtained by Herschel PACS

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We utilized a 2-D PDR code developed by Lee et al. (2014) to explore the observed OH line fluxes toward embedded protostars. This 2-D PDR code combines self-consistently the FUV radiative transfer, gas-energetics, chemistry, and line radiative transfer. We modeled two sources, GSS30-IRS1 and Elias29, which show conspicuous line emission in the Herschel/PACS wavelength range. The physical and chemical structure for a given embedded source was derived by fitting the PACS CO line fluxes. After exploring various parameter spaces, we conclude that IR-pumping effect either by the central IR source and dust in-situ is insignificant for OH emission, unlike previous studies. We here present a possible solution for the observed OH fluxes, which require a high OH abundance and temperature at the inner-part of the UV heated cavity wall.

[포IM-09] Far-ultraviolet study of the local supershell GSH 006-15+7

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We have analyzed the archival data of far ultraviolet (FUV) observations made for the region of GSH 006-15+7, a large shell-like structure discovered by Moss et al. (2012) from the H I velocity maps. FUV emission is seen enhanced in the lower supershell region and is believed to originate from dust scattering of interstellar photons. A corresponding Monte Carlo simulation indicates that the supershell is located at a distance of 1250^{+750}_{-500} pc, similar to the previous estimation of 1.5±0.5 kpc based on kinematic considerations. The spectrum obtained for the lower supershell exhibits molecular hydrogen fluorescence lines: a simulation model for this candidate photodissociation region (PDR) yields a rather high total hydrogen density of $n_H \sim 30$ cm^{-3} with H2 column density of $N(H_2) = {}^{1017.5\ -\ 20.0}$ cm^{-2}. It is argued that the region is in a transition stage from a warm to a cool neutral phase. Strong C IV emission is also seen in the spectrum, but it is not believed to be associated with the supershell as the corresponding spectral map shows a broad region of enhancement both inside and outside the supershell.