

## **Extinction and PAH intensity variations across the HII region IRAS 12063-6259**

*D. J. Stock (UWO), E. Peeters (UWO, SETI), A. G. G. M. Tielens (Leiden), J. N. Otaguro (UWO) and A. Bik (MPIA)*

The spatial variations in PAH band intensities are generally attributed to variations of the physical conditions in the environment hosting the emitting PAH molecules. However, in recent years, it has been suggested that such variations are caused mainly by extinction. To resolve this question, we have obtained near-infrared (NIR), mid-infrared (MIR) and radio observations of the compact HII region IRAS 12063-6259. We use these data to construct multiple independent extinction maps and to measure the main PAH feature intensities (6.2, 7.7, 8.6 and 11.2  $\mu\text{m}$ ). Three extinction maps are derived: the first using the NIR hydrogen lines and case B recombination theory; the second combining the NIR data, radio data and case B recombination; and the third making use of the Spitzer/IRS MIR observations to measure the 9.8  $\mu\text{m}$  silicate absorption feature intensity using the Spoon method and PAHFIT. We conclude that different areas of IRAS 12063-6259 possess markedly different extinction properties, with some regions displaying both silicate absorption and corresponding NIR extinction, and other regions displaying NIR extinction and no silicate absorption. While such breakdowns of the relationship between the NIR extinction and the silicate absorption strength have been observed in molecular clouds, they have never been observed for HII regions. We then compare the PAH intensity variations in the Spitzer/IRS data after dereddening to those found in the original data. Generally it was found that in, the PAH band intensity variations persist even after dereddening, implying that extinction is not the main cause of the PAH band intensity variations.