
ISM spectra from near- to mid-infrared

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Abstract

This presentation reviews variations of the PAH emission in Galactic objects and nearby galaxies using the recent data from near- to mid-infrared. The Infrared Camera (IRC) onboard AKARI provided low-resolution spectroscopy in the near-infrared (2.5 - 5 μ m). This spectral range was not covered by Spitzer/IRS, but contains the 3.3 μ m aromatic C-H and 3.4 μ m aliphatic C-H bands as well as several ice absorption features, providing useful information on PAHs and interstellar ices. Combining IRC and IRS spectra, full PAH spectra from near to mid-infrared can be studied. In particular, the emission bands at 3.3 - 3.5 μ m are sensitive to the PAH size and the aliphatic to aromatic component ratio, whose information cannot be easily obtained solely from mid-infrared spectra. Analyses of objects that have been observed both with the IRS and the IRC are presented and the variation of properties of the band carriers, including the size and the fraction of the aliphatic component, is discussed. The IRC also had the imaging capability to observe the SED of the diffuse emission from near- to midinfrared (3 - 24 μ m) continuously. This allows us to study the relative variation of the abundance of PAHs and very small grains in various environments. These data provide significant information for the study of processing of small dust species and ice components in the interstellar medium.

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