

Q43a Variations of the 3.3 μm feature within specific galactic objects

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Polycyclic Aromatic Hydrocarbons (PAHs) comprise a substantial fraction of the carbon budget in our galaxy, making the study of PAH formation, evolution, and growth of tantamount importance to the understanding of carbon in our galaxy and beyond. Numerous emission bands due to PAHs are detectable in the near to mid-infrared, with the relative intensities of the observed bands being extremely sensitive to the sizes, ionisation states, and morphologies of the PAHs present. In particular, two bands in the near infrared, the 3.3 μm and 3.28 μm emission bands are related closely to emissions arising from C–H vibrations at two specific sites on the edges of PAH molecules. The relative intensities of these stretches are likely related to PAH growth and destruction mechanisms, both of which have recently been shown to occur very efficiently given suitable environmental conditions. This talk presents spectroscopic analysis and comparison of a few objects observed with AKARI, and the spatial variations of the intensity ratios between these emission features. Differences are found between different types of astronomical object, and possible interpretations are given in terms of PAH growth and destruction mechanisms and the respective photostability of specific molecular forms.