

Hydrogenated Amorphous Carbons: evolution of interstellar carbon dust

Marie Godard

*CSNSM, Centre de Sciences Nucléaires et de Sciences de la Matière, UMR 8609,
Université Paris-Sud, 91405 Orsay Campus Cedex – France*

Observations of infrared (IR) bands (emission and absorption) show that polycyclic aromatic hydrocarbons (PAH) and hydrogenated amorphous carbons (HAC or a-C:H) are both important component of interstellar carbon matter, as macromolecules and solid dust particles, respectively. The main IR absorption feature of a-C:H dust (at 3.4 μm) has been first detected in diffuse interstellar medium toward the Galactic center in the early eighties [1]. Now, several IR bands are widely observed, also in external galaxies [2], showing the ubiquitous nature of interstellar a-C:H dust component. Their observables and properties will be reviewed.

A important issue concerns the evolution of a-C:H in the different astrophysical environments and how it is related to the cycle of matter in a galaxy. Exposition to UV photons, energetic particles such as those of cosmic rays, shocks, hydrogen atoms, or thermal annealing can alter the structure and properties of this hydrocarbon dust, and thus induce a modification of the corresponding observables. I will present results that have been obtained on this topic from observations, models, and laboratory experiments.

Références

- [1] Wickramasinghe D. T. & Allen D.A., *Nature*, 287, 518 (1980)
- [2] Dartois E. et al, *A&A*, 423, 549 (2004)