

**Molecular Universe Early Stage Researcher Position
Team 19**

Location of Appointment : Toulouse - F

Team Leader (contact person): Christine Joblin

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Duration of Appointment (in months) : 24

Starting Date : 01-10-2006

Requirements with respect to candidate : Masters degree in physics , astronomy or physical chemistry

Title of Research project : Photophysics and chemistry of interstellar PAHs and carbon clusters

Abstract:

One of the interesting discovery of infrared astronomy is the ubiquitous presence of polycyclic aromatic hydrocarbons (PAHs) and carbon clusters in interstellar and circumstellar environments. The nature of these large carbon molecules is driven by their formation and further evolution under the action of UV photolysis and chemistry. The experimental set-up PIRENEA has been developed to specifically address these questions. The photodissociation of PAHs by UV photons was shown to produce carbon clusters. However the competition with rehydrogenation, in particular by reactivity with H atoms, will limit this production in astrophysical environments. Another limiting process is the reactivity with oxygen that will destroy the carbon skeleton. Recombination with electrons, which can be dissociative is also an important process to quantify.

The student will explore experimentally these processes that lead to the growing, processing and destruction of large carbon molecules in space.

This project will be led in collaboration with the IEM-CSIC Madrid (Team 11 - J. Cernicharo). Both teams have a large experience in the observation of large carbon molecules, in astrophysical modelling and in laboratory experiments. They are strongly involved in the above project in particular in the context of the preparation of the Herschel mission. There is also an expertise in theoretical chemistry.

Application: The position is available from October 1st 2006. Letters of application should be sent by September 20th 2006 to the address above including a curriculum vitae with a detailed list of university courses, a description of research experience and a letter of motivation. Letters of recommendation are welcome. Qualified women candidates are specifically encouraged to apply.