

# A search for PAHs in astrophysical environments

J. Cami<sup>1</sup>, X. Tan<sup>1</sup>, L. Biennier<sup>2</sup> and F. Salama<sup>1</sup>

<sup>1</sup>NASA Ames Research Center, MS 245-6 Moffett Field, CA 94035, USA  
email:jcami@mail.arc.nasa.gov

<sup>2</sup>PALMS, Univ. Rennes, France

**Abstract.** We present the results of a dedicated search for the spectral signatures in the visible range of neutral polycyclic aromatic hydrocarbons (PAHs) in astronomical observations representing various astrophysical environments, probing a total column of line of sight material corresponding to  $A_v=50$ .

Laboratory measurements of PAHs in simulated astrophysical conditions are now available (see contribution of Tan et al.) which provide for the first time the exact wavelengths for the spectral features of these molecules, as well as detailed information on the intrinsic line profiles and oscillator strengths. These measurements therefore allow a direct comparison to astronomical observations and an estimate of – or upper limit to – the abundance of individual PAHs in space.

As the column densities for individual PAHs in interstellar or circumstellar lines of sight are expected to be very low, such a comparison and analysis requires astronomical observations at very high signal to noise. We present such a data set here for lines of sight representing diffuse clouds and circumstellar environments of carbon stars, and their comparison with gas phase spectra of a representative set of free, cold PAHs.

**Keywords.** astrochemistry, ISM:abundances, ISM:molecules

---

## Acknowledgements

This work is supported by the NASA Astronomy and Physics Research and Analysis (APRA) Program of the Science Mission Directorate. This research was performed while J.C., X.T. and L.B. held a National Research Council Research Associateship Award at NASA-Ames Research Center.