

**HIGH-RESOLUTION SOFT X-RAY SPECTROSCOPY  
OF DILUTE SPECIES (SOME FOR ASTROPHYSICS)  
AT THE PLEIADES BEAMLINE**

**A. R. Milosavljević<sup>1</sup>, C. Nicolas<sup>1</sup>, E. Robert<sup>1</sup>, J.-M. Bizau<sup>1,2</sup> and J. Bozek<sup>1</sup>**

<sup>1</sup>*SOLEIL, l'Orme des Merisiers, St. Aubin, BP48, 91192 Gif sur Yvette Cedex, France*

<sup>2</sup>*Institut des Sciences Moleculaires d'Orsay (ISMO), CNRS UMR 8214,  
Université Paris-Sud, Université Paris-Saclay, F-91405 Orsay cedex, France*

*E-mail: milosavljevic@synchrotron-soleil.fr*

The laboratory investigation of X-ray photoabsorption and photoionization cross sections of atoms and ions are important for modeling of different systems relevant in astrophysical research (see Kallman & Palmery (2007), Tiedtke et al. (2008), McLaughlin et al. (2017) and references therein).

The PLEIADES beamline (<https://www.synchrotron-soleil.fr/fr/lignes-de-lumiere/pleiades>) of the SOLEIL synchrotron facility in France covers the soft X-ray spectral range from 10 to 1000 eV. The beamline includes three permanently installed experimental stations that allow for: coincident photoelectron photoion measurements (EPICEA), high resolution photoelectron spectroscopy (using the Scienta R4000) and for the investigation of photoionization of ions produced by an ECR source (MAIA) (Bizau et al. 2016). The beamline is designed for ultra-high resolution spectroscopy of dilute species: atoms, molecules, clusters, nanoparticles and ions, as well as of liquid microjets. The beamline can also accommodate for custom user setups.

The talk will address the design of the PLEIADES beamline and discuss its potential for high resolution soft X-ray spectroscopy of dilute species relevant for astrophysical modeling.

**References**

- Bizau J.-M. et al.: 2016, *Journal of Electron Spectroscopy and Related Phenomena*, **210**, 5.  
Kallman, T. R. and Palmery, P.: 2007, *Rev. Modern Phys.*, **79**, 79-133.  
McLaughlin, B. M., Bizau, J.-M., Cubaynes, D., Guilbaud, S., Douix, S., Al Shorman, M. M., El Ghazaly, M. O. A., Sakho, I. and Gharaibeh, M. F.: 2017, *Monthly Notices of the Royal Astronomical Society*, **465**, 4690.  
Tiedtke, K. et al : 2008, *J. Appl. Phys.*, **103**, 094511.