Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Photoionization Cross Sections of Phosphorus Cations: A tool for the Search of Life in the Universe[1] GUILLERMO HINOJOSA, Univ Nacl Autonoma de Mexico, S. N. NAHAR, The Ohio State University, OH43210-1173, USA, E. M. HERNANDEZ, Univ Nacl Autonoma de Mexico, A. COVINGTON, Physics Department, University of Nevada, Reno, NV89557-0220, USA, L. HERNANDEZ, Univ Nacl Autonoma de Mexico, K. CHARTKUNCHAND, Physics Department, University of Nevada, Reno, NV89557-0220, USA, A. ANTILLON, A. MORALES-MORI, O. GONZALEZ-MAGANA, Univ Nacl Autonoma de Mexico, D. HANSTORP, University of Gothenburg, SE-41296, Gothenburg, Sweden, A. JUAREZ, Univ Nacl Autonoma de Mexico — Together with H, C, N, O and F, a chemical element indispensable for life is also phosphorus. The detection of astrophysical P depends on Earth-based observatories and on spacecraft equipped with spectrometers. Elements in space are ionized by ambient radiation. The most common phosphorous cations are likely P^+, P^{2+} and P^{3+}. Photoionization (PI) measurements for P are scarce, but third generation synchrotron sources, combined with the photoion yield spectroscopy technique, have made PI data available. With this technique, we collided an intense beam of EUV photons with well-collimated beams of target P cations to measure PI cross sections and spectroscopy. The P^+ spectrum shows sharp resonances near and at the threshold. These findings may explain the high reactivity of the cation at low energy. However, at the high energy interval of this study, spectroscopic features fade out for the low lying states.

[1]Grants: DOE, ALS-LBNL, NSF,CONACyT, UNAM-IN109-317, Swedish Research C.

Guillermo Hinojosa
Univ Nacl Autonoma de Mexico

Date submitted: 19 Jun 2018 Electronic form version 1.4