

Accepted Manuscript

Lab-based ambient pressure X-ray photoelectron spectroscopy from past to present

Chris Arble, Meng Jia, John T. Newberg

PII: S0167-5729(18)30011-6

DOI: [10.1016/j.surfrep.2018.02.002](https://doi.org/10.1016/j.surfrep.2018.02.002)

Reference: SUSREP 458

To appear in: *Surface Science Reports*

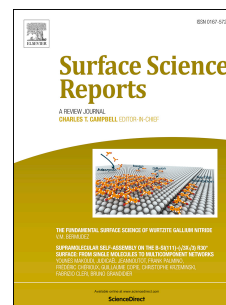
Received Date: 5 July 2017

Revised Date: 29 January 2018

Accepted Date: 5 February 2018

Please cite this article as: C. Arble, M. Jia, J.T. Newberg, Lab-based ambient pressure X-ray photoelectron spectroscopy from past to present, *Surface Science Reports* (2018), doi: 10.1016/j.surfrep.2018.02.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Lab-based Ambient Pressure X-ray Photoelectron Spectroscopy from Past to Present

Chris Arble, Meng Jia, John T. Newberg*

Department of Chemistry & Biochemistry, University of Delaware, Newark, DE 19716.

*Email: jnewberg@udel.edu

Abstract

Chemical interactions which occur at a heterogeneous interface between a gas and substrate are critical in many technological and natural processes. Ambient pressure X-ray photoelectron spectroscopy (AP-XPS) is a powerful spectroscopy tool that is inherently surface sensitive, elemental and chemical specific, with the ability to probe sample surfaces in the presence of a gas phase. In this review, we discuss the evolution of lab-based AP-XPS instruments, from the first development by Siegbahn and coworkers up through modern day systems. A comprehensive overview is given of heterogeneous experiments investigated to date via lab-based AP-XPS along with the different instrumental metrics that affect the quality of sample probing. We conclude with a discussion of future directions for lab-based AP-XPS, highlighting the efficacy for this in-demand instrument to continue to expand in its ability to significantly advance our understanding of surface chemical processes under *in situ* conditions in a technologically multidisciplinary setting.

Keywords: Photoemission, operando, surface, interface, uptake, catalysis.

Download English Version:

<https://daneshyari.com/en/article/7844979>

Download Persian Version:

<https://daneshyari.com/article/7844979>

[Daneshyari.com](https://daneshyari.com)