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CiQUS Lecture



Synchrotron-based photoelectron spectroscopy of hybrid perovskites. From surface to device characterization Dr. Alberto García-Fernández

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More info: Short bio

Tuesday, December 21, 2021 12:15 p.m. CiQUS Seminar Room & Zoom Session

FONDO EUROPEO DE DESENVOLVEMENTO REXIONAL PO FEDER Galicia 2014-2020 – Unha maneira de facer Europa

Link to short bio: https://www.kth.se/profile/alberto3/

Abstract:

Since middle of twentieth century perovskite materials have been intensively studied by the scientific community because of their unprecedented multifunctional properties. In 2009 one subclass of perovskites, known as hybrid perovskites, with the general formula ABX3 revolutionized the optoelectronic field after the discovery of their unprecedented and remarkable optical and electronic properties. These materials, specially Pb-based perovskites, have been used, among other applications, in solar cells, now achieving efficiencies over 25%, in light-emitting diodes (LEDs) with external quantum efficiency exceeding 21% and as photodetectors. Most of the actual perovskite-based optoelectronic devices typically consist of a thin film of a polycrystalline perovskite sandwiched between two selective contacts. Therefore, surfaces and interfaces significantly influence the stability and performance of any perovskite-based device. Photoelectron spectroscopy (PES) is well known as a very powerful technique to investigate electronic and chemical properties of surfaces and interfaces experimentally, as it provides information with elemental sensitivity. The use of synchrotron-based soft X-ray photoelectron spectroscopy enables high surface sensitivity and nondestructive depth-profiling among other advantages.