



# ILV

## Institut Lavoisier de Versailles

## INTERFACES AND METHODOLOGIES

### Electrochemistry

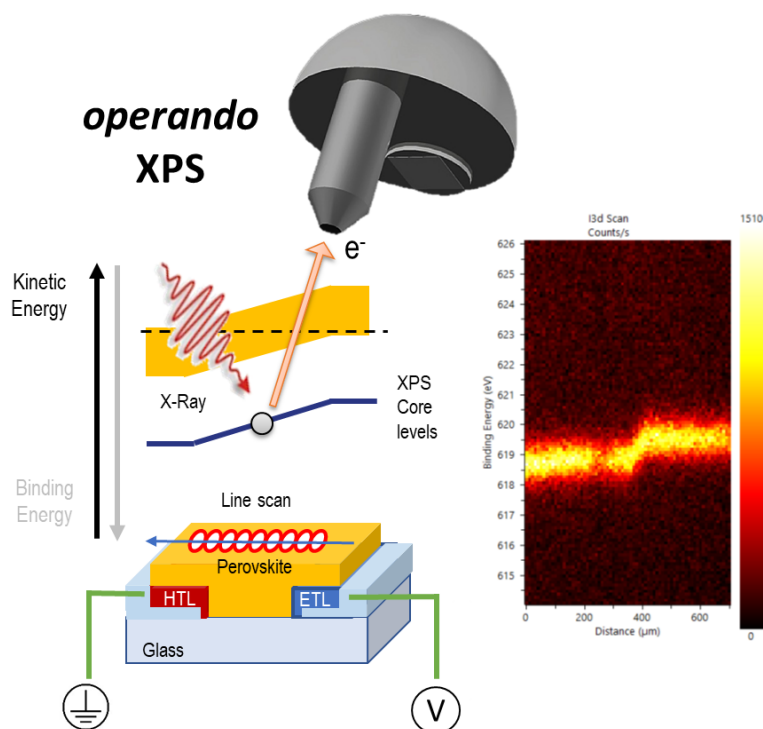
To identify the mechanisms at semiconductor/electrolyte and metal/electrolyte interfaces, advanced electrochemical techniques are used such as (photo)voltammetry, electrochemical impedance (fixed frequency and multi-frequency), quartz microbalance and electro(photo)luminescence.

### RECENT PUBLICATIONS

Under construction

### XPS Operando

We develop a research activity around the chemical characterization of surfaces under electrical or optical stimulation. These operando XPS experiments initially focused on electrochromic glasses (application of a potential difference to modify the transmission of the glass) were extended to solar cells (heterolateral junctions) under polarization or illumination (white light, laser). This methodology can be applied to any type of optoelectronic devices provided that contain suitable contacts and geometry. These studies provide a better understanding of the reaction mechanisms taking place on the surface and interface of various objects (ionic migration, change in oxidation states).

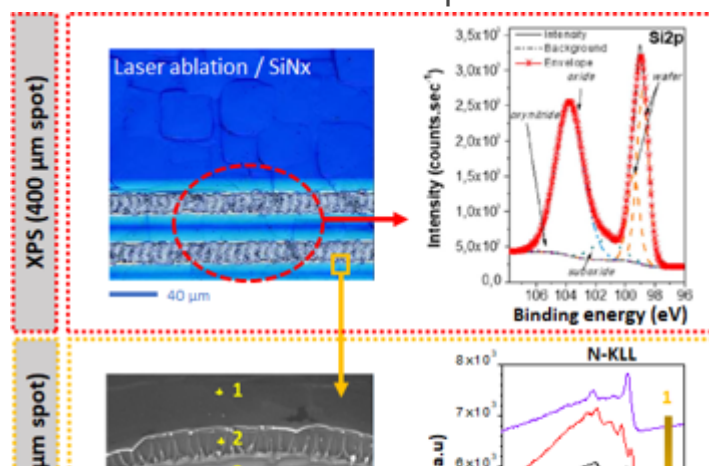


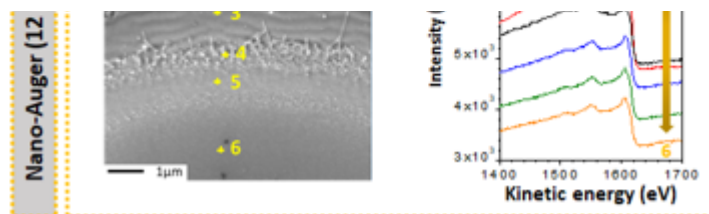
## RECENT PUBLICATIONS

under construction

## Multi scale

The team benefits from an instrumental pool to develop multi-technique characterization methodologies to investigate, from the macroscopic to nanometric scale, the physicochemical properties of materials, structures and devices developed within the team, from the laboratory and from its numerous academic and industrial collaborations. The complementarity of the information obtained makes it possible to respond precisely to the various fundamental or applied issues encountered.





## RECENT PUBLICATIONS

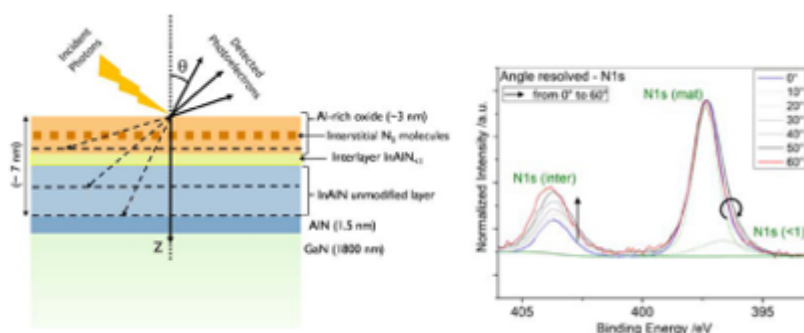
*Sol. Energ. Mat. and Sol. Cells, 2019*

### Buried interfaces

The chemistry of the interfaces plays a fundamental role in the properties of the devices (performance, stability, failure, etc.). One of the challenges lies in accessing buried interfaces without modifying the initial

information. The team uses different

strategies: sequential ionic abrasion and angular analysis for photoemission analyses, direct access in transverse section for localized analysis by Auger or by microscopy. An innovative methodology coupling GD-OES and XPS is also used in the case of deeply buried interfaces (IPVF partnership).



## RECENT PUBLICATIONS

*ECS Transactions, 2019*

*Electro. Chem. 2020*

*Coatings, 2021*

### Reliability and data processing

The EPI group is also involved in the development of new data processing methodologies, both through its involvement in the "Data Methodology and Reliability" working group of the FR SPE research federation, and through its work on the decomposition of X-AES transitions.

## RECENT PUBLICATIONS

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JVSTA, ~~20~~24