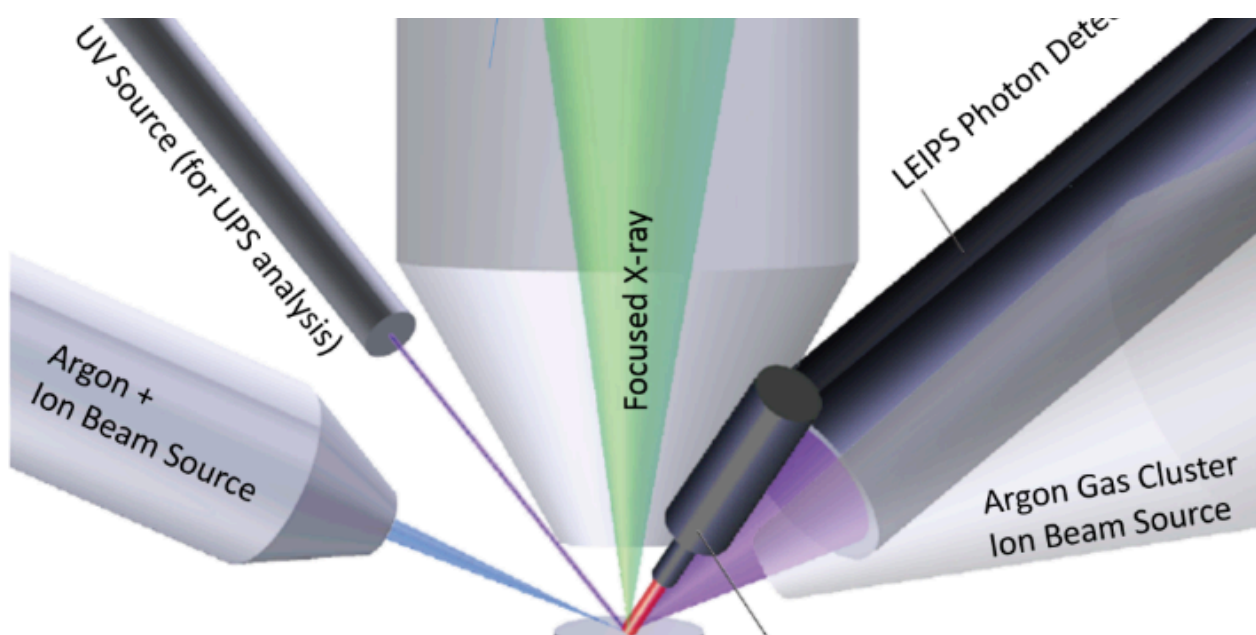


# NEWSLETTER



## **INSIDE THIS ISSUE:**

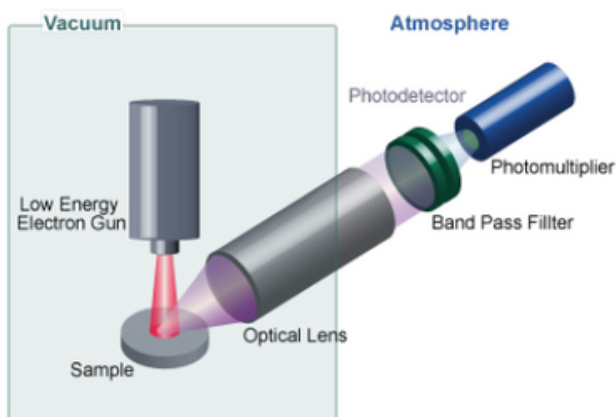
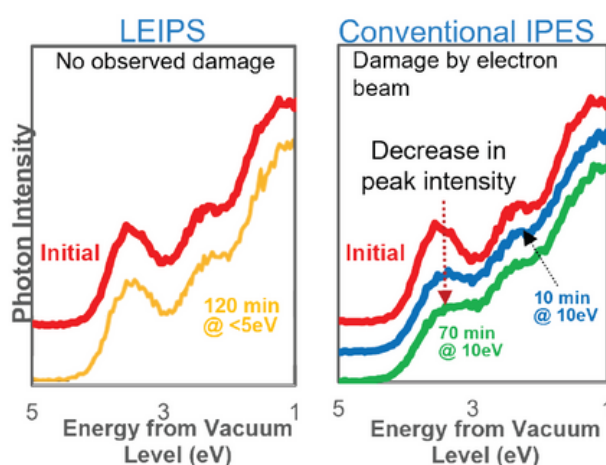
We present the combined use of Ultraviolet Photoemission Spectroscopy (UPS) and Low Energy Inverse Photoemission Spectroscopy (LEIPS) on PHI instruments to obtain full energy diagrams of conductive and semiconductive samples.

A live event that is happening in March 2025.

## Low Energy Inverse Photoemission Spectroscopy (LEIPS)

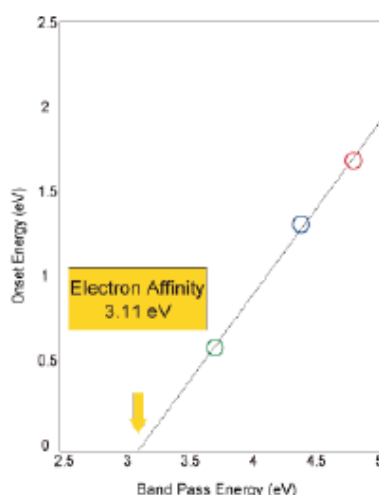
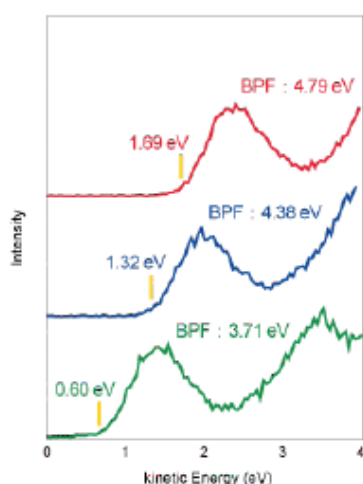
Measuring the unoccupied electronic states of surfaces, including the Conduction Band Minimum (CBM) and Electron Affinity (EA), is crucial for enhancing the performance of batteries, photovoltaics, and optoelectronic materials.

LEIPS on the PHI multi-technique instrument is an ideal method to evaluate the unoccupied conduction band of materials. It innovates the use a low energy/high intensity electron beam to a sample surface. The emitted photons in the near ultraviolet range are detected with high resolution and sensitivity, and low sample damage compared to other traditional methods.



A dedicated Bremsstrahlung Isochromat Spectroscopy detector (BIS) is used with a selectable photon energy range up to 4.88 eV.

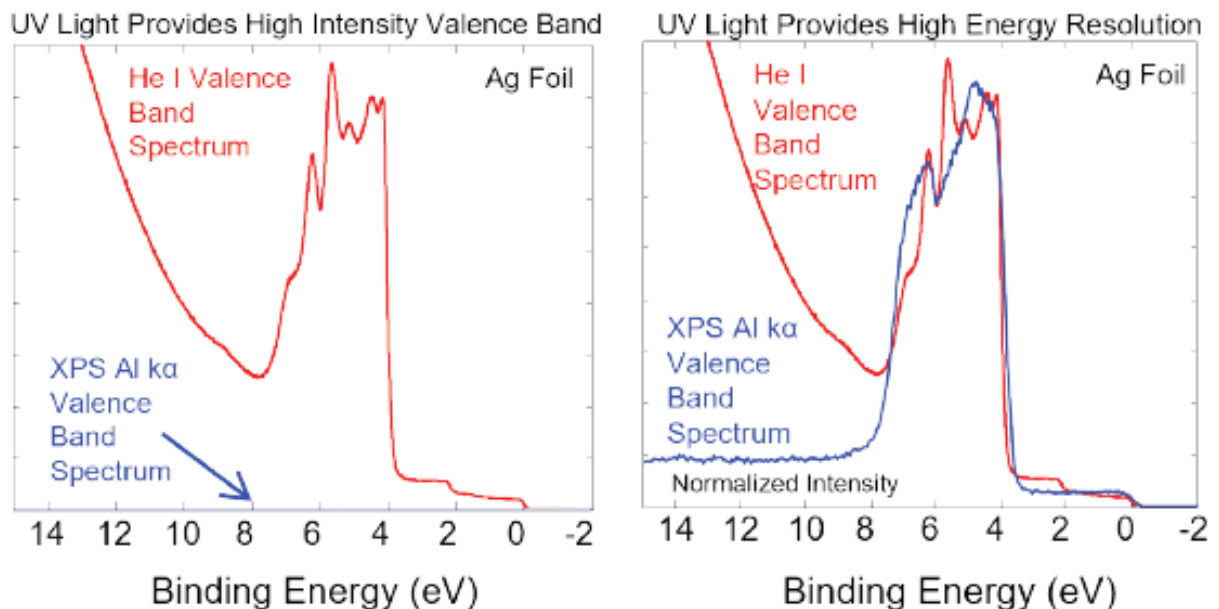
Optical bandpass filters can be switched easily (outside of vacuum) depending on the application, with selectable central wavelengths.



10 nm copper phthalocyanine thin film on ITO measured with 3 different band pass filters (BPF) allows for the calculation of the electron affinity by extrapolating to zero onset energy.

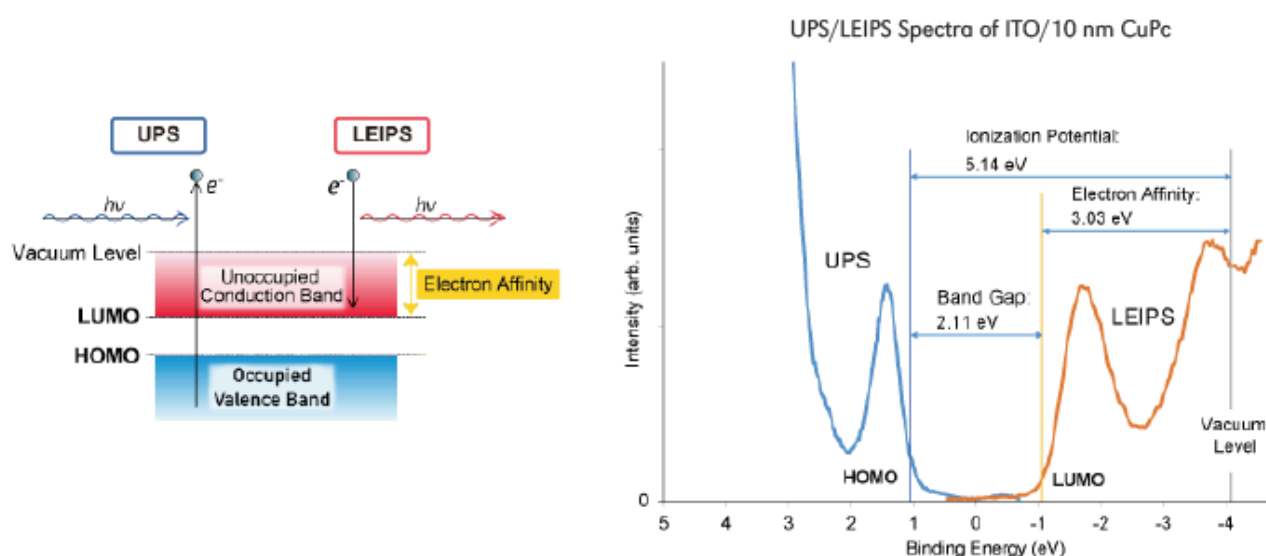
## Ultraviolet Photoemission Spectroscopy (UPS)

Ultraviolet Photoelectron Spectroscopy (UPS) is a surface analysis technique in which a sample is irradiated with UV light, and the kinetic energy of electrons emitted from the highest occupied molecular orbitals is measured. UPS uses lower-energy incident photons (21.2 eV, He I and 40.8 eV, He II) compared to X-ray Photoelectron Spectroscopy (XPS), making it ideal for analyzing the valence electronic states. Two common measurements in UPS are the determination of the work function and the acquisition of the valence band energy.



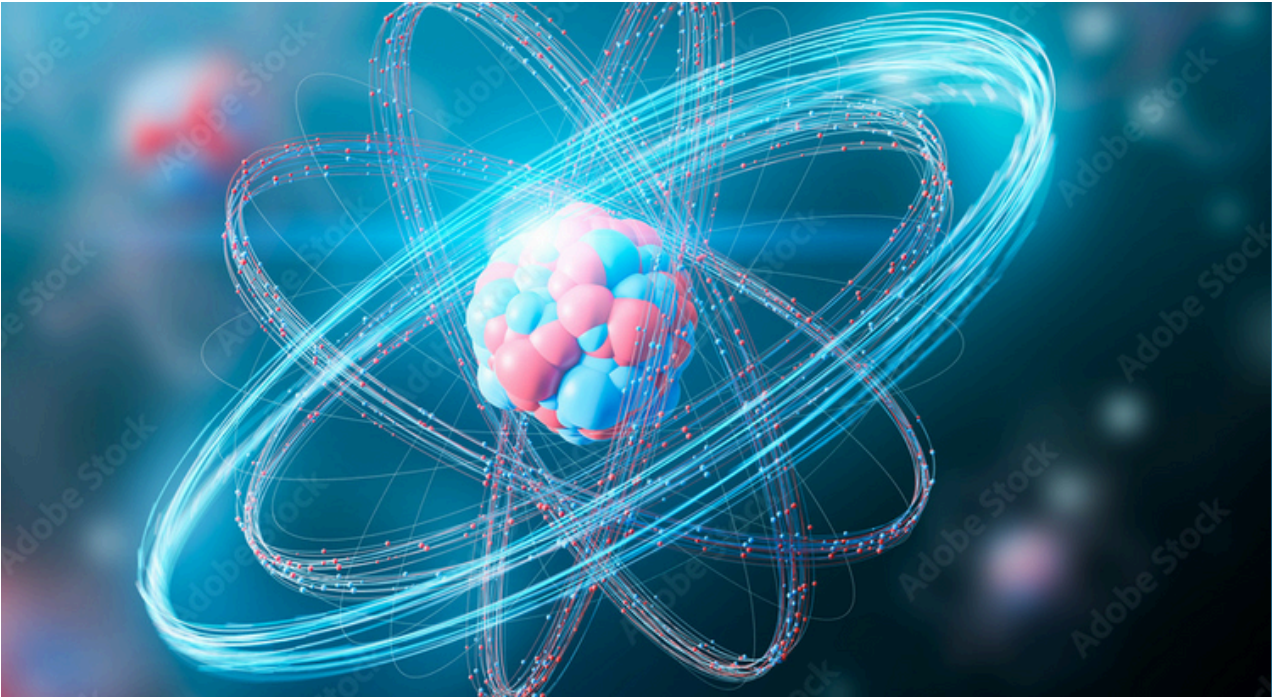
## Measurement of Both the Occupied and Unoccupied Electronic Energy Levels of a Sample

Combining the energy measurement of the occupied (valence) level obtained by UPS and the energy of the unoccupied (conduction) level obtained by LEIPS provides the whole picture of the band structure for a semiconductor film.



In the PHI multi-technique instrument, LEIPS, UPS, monoatomic Argon and cluster ion sputter sources, and neutralization beams are all aligned to the XPS measurement position, which allows for versatile and comprehensive in-situ measurements.

**"Please CONTACT us to explore how the LEIPS and UPS upgrades can enhance the performance of your PHI instrument!"**



## **Surface Science Technology Workshop**

We are thrilled to invite you to our upcoming workshop, designed to connect with our valued clients and share important updates, insights, and exciting developments. This will be a fantastic opportunity to engage with our team, ask questions, and explore how we can continue supporting your success.

### Event Details:

Date: March 28, 2025

Time: 2:00 PM – 5:00 PM

Location: Institute of Materials Research and Engineering (IMRE)

Address: 2 Fusionopolis Way, Singapore 138634

A separate email with event details and a request to confirm your attendance will follow shortly.

We sincerely hope you can join us for this valuable session. Your participation will help strengthen our ongoing partnership.

Looking forward to seeing you there!



A new member to our Family

Welcome onboard, Raja!



“ Hello CoreTech Team!

My name is Raja from Malaysia, and I'm excited to join the team as the new Service Engineer. I bring 3 years of experience in Engineering , having previously worked at Pfeiffer Vacuum , where I had the chance to dismantle and assemble dry pumps in hook-up process.

A big goal of mine from this career is to learn as much as possible from my talented colleagues and grow within my role. I'm eager to tackle new challenges and expand my expertise in hands on and troubleshooting. I'm confident this will help me make more impactful contributions over time.

Outside of work, I'm passionate about fishing and food hunting , and I'm always on the lookout for good food and during my free time I will go out for some fishing. I'm really looking forward to contributing to the team and learning from all of you. Please don't hesitate to reach out – I'd love to connect! ”

#### Contact Us:

We'd love to hear from you!

If you have any questions, feedback, or would like to learn more about our products and services, please don't hesitate to reach out.

Email: [sales@coretechint.com](mailto:sales@coretechint.com)

Phone: (852) 3748-9602

Website: [www.coretechint.com](http://www.coretechint.com)



As the holiday season approaches, we would like to take a moment to express our sincere gratitude for your continued support throughout the year. On behalf of the entire team, we wish you and your family a **Merry Christmas and a Happy New Year** filled with peace, joy, and prosperity. We look forward to continuing our partnership in the coming year.

