



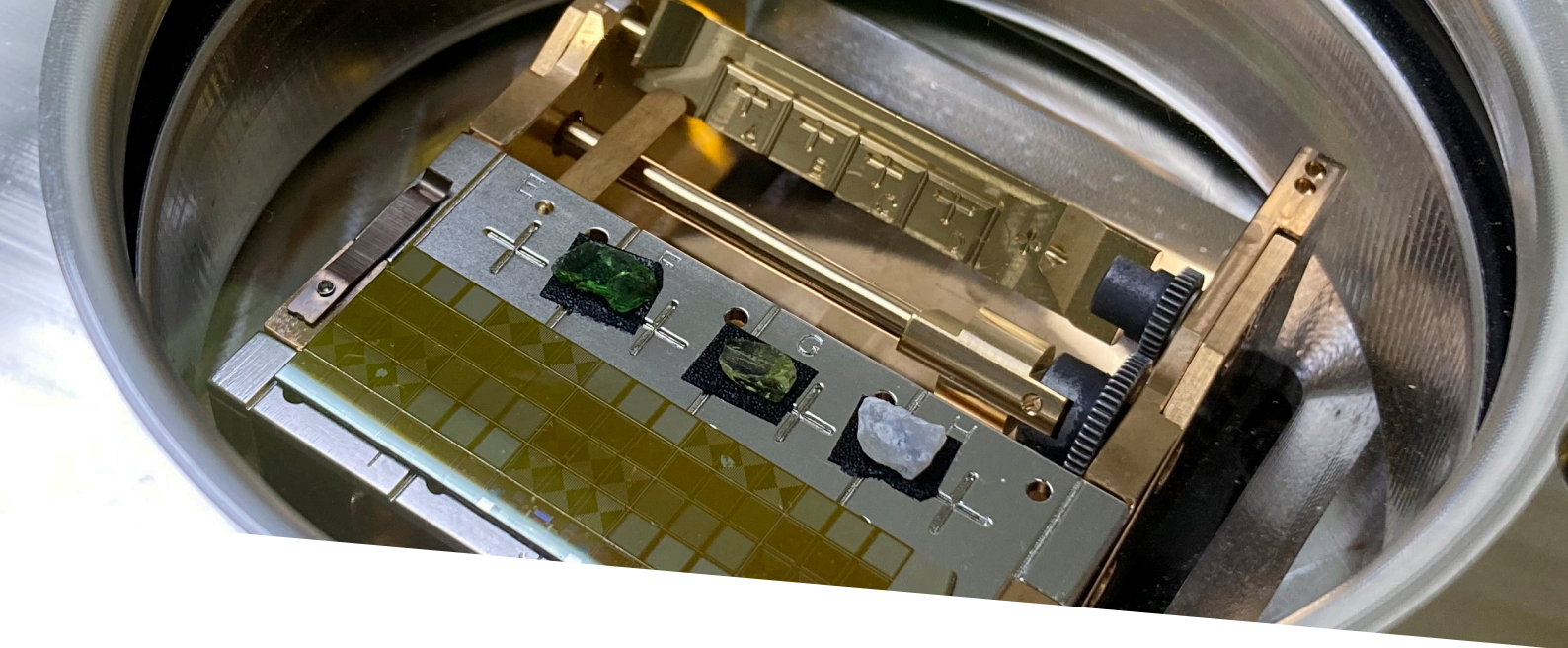
CHARACTERISATION SERVICES



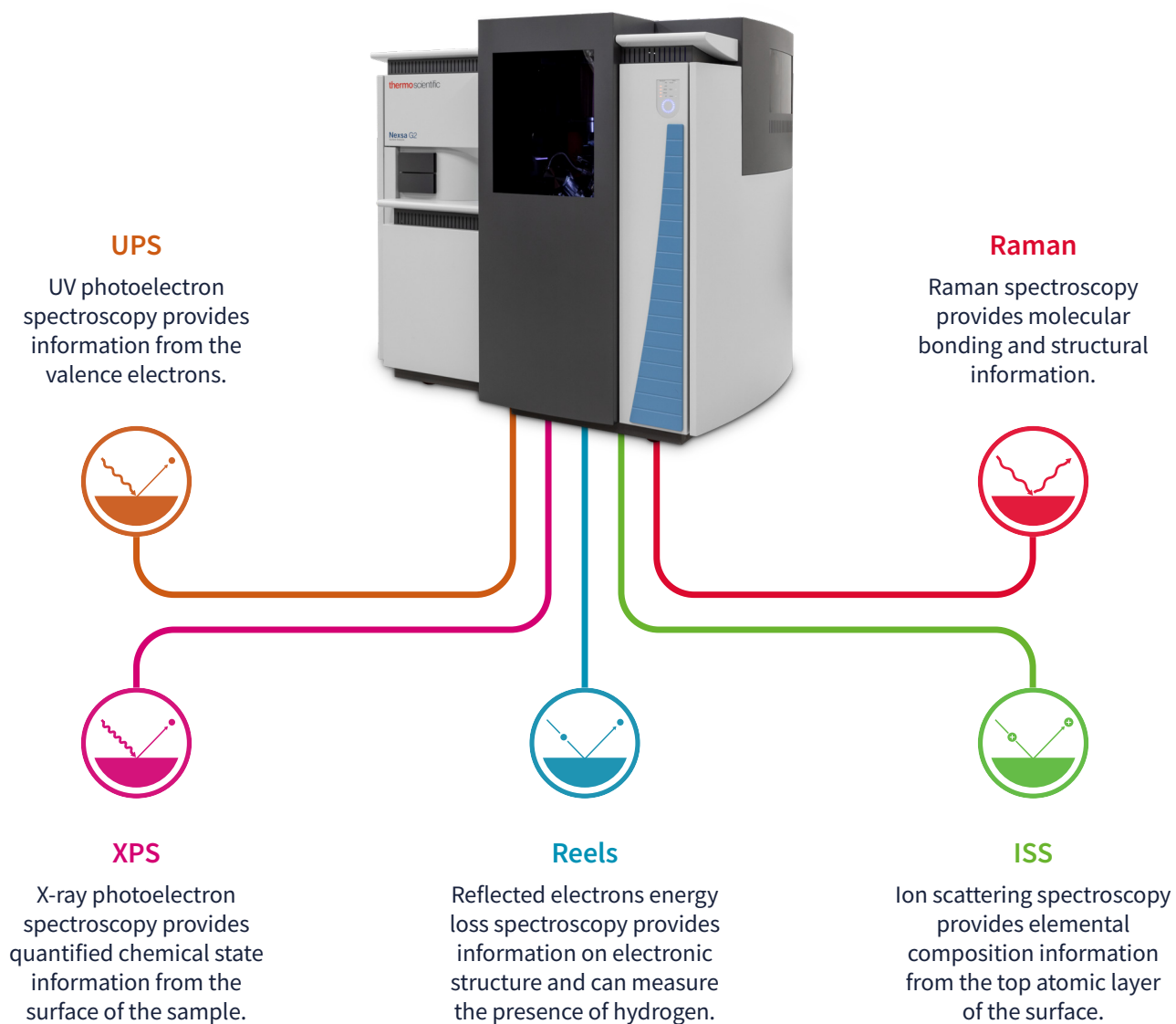
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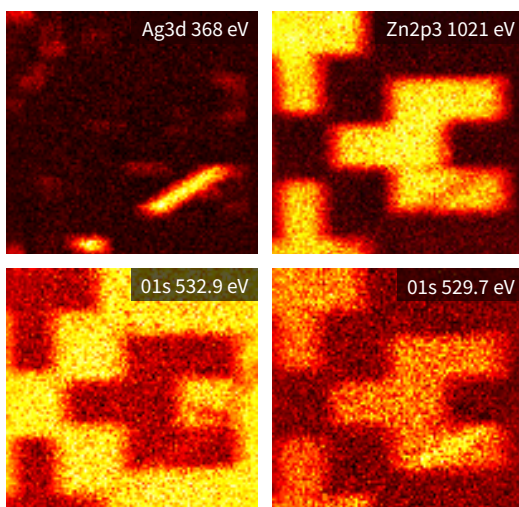
Nexsa G2 multi-technique surface analysis system provides extensive surface characterisation techniques in a single tool:



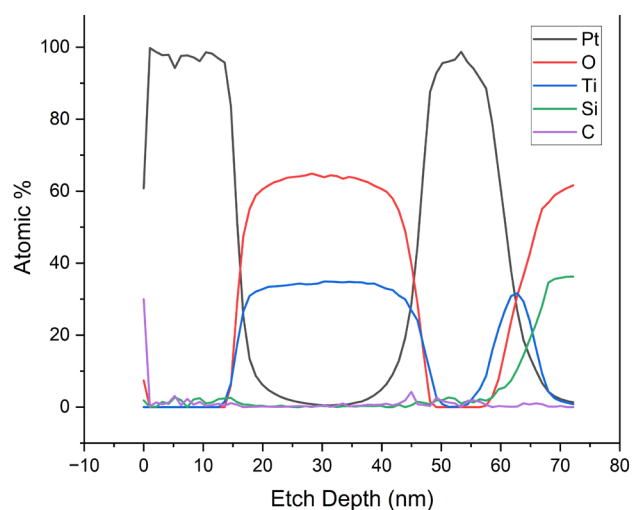
What questions can surface analysis answer?

- Not only identifies what elements are present, but also provides information on their **bonding environment**
- Is able to scan across a line or map a surface providing **analysis of homogeneity of samples**
- **Argon etching** allows depth profile to be interrogated through a material. For measurements on polymer samples, cluster cleaning can be used to gently clean the surface without significantly impacting the chemistry of the material
- Co-incident measurement with other techniques:
 - Raman: for chemical structure and phase
 - UPS: work function measurement
 - REELS: band gap measurement
 - ISS: more sensitive investigation of surface coverage

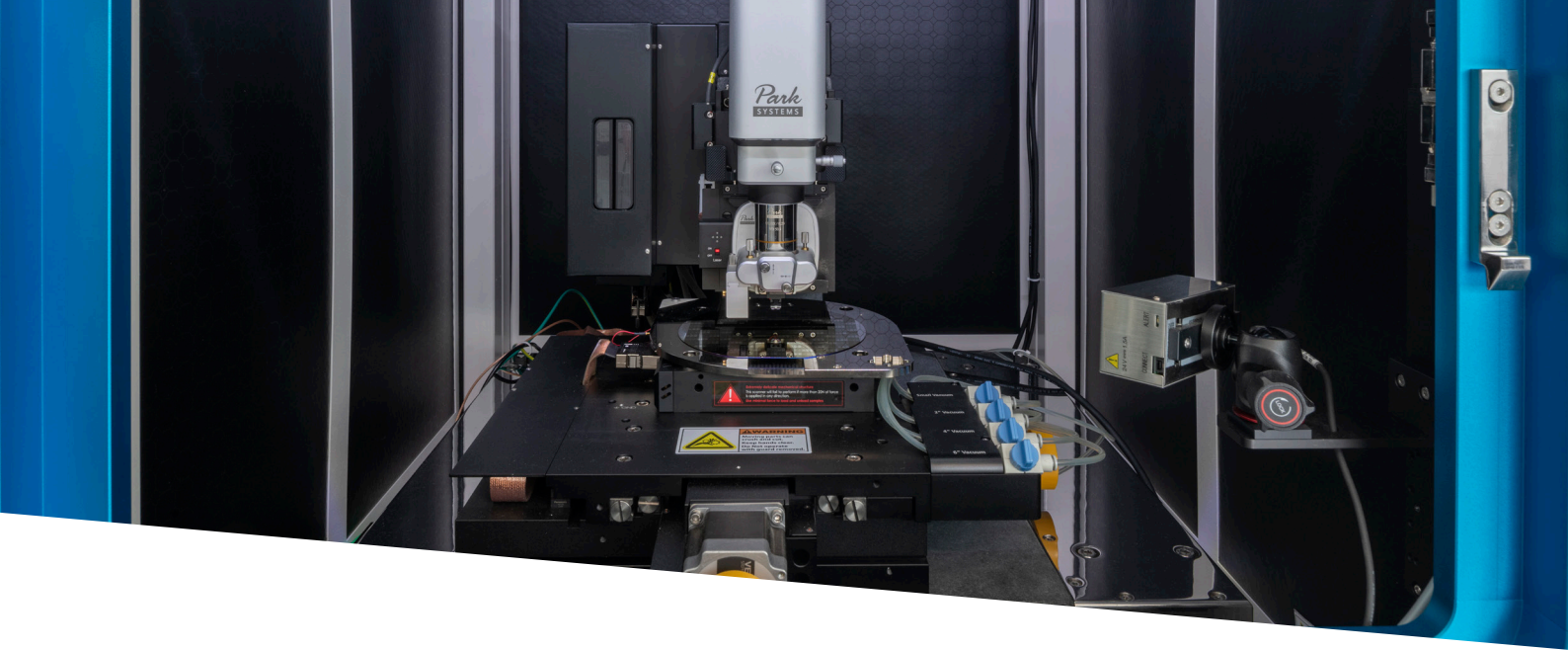
Coupled with AFM, the above analysis techniques allow the investigation of **chemical environment** along with **topography of samples** as well as **localised conductivity measurements**.



SnapMap of ZnO nanowires showing silver defect and clear distinction between ZnO and SiO₂ spatial distribution in the O1s map at distinct binding energies



Depth profile through a memristor stack



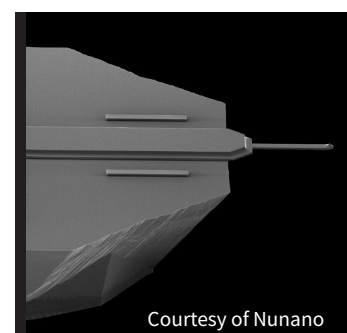
Atomic Force Microscopy

Our Park NX20 AFM, as well as standard capabilities, has a range of specialist features including:

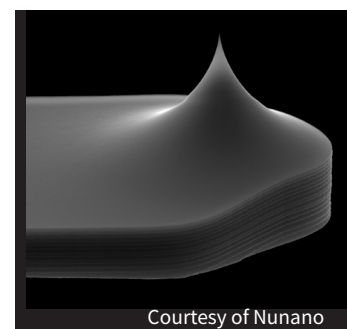
- True Non-Contact modes
- Pinpoint mode
- Conductive AFM
- Electrostatic Force Microscopy
- Kelvin Probe Force Microscopy
- Scanning Spreading Resistance Microscopy
- Scanning Capacitance Microscopy
- Piezoresponse Force Microscopy
- Magnetic Force Microscopy
- Temperature control
- Adaptive scanning

Scanning Electron Microscope (SEM)

The Tescan Field Emission Gun (FEG) SEM has a larger than standard chamber enabling it to take wafers and other samples up to 200mm diameter in size, with magnification up to 1,000,000x. It also has EDX spectroscopy allowing non-destructive material analysis deeper into the material than XPS, so can provide complementary information. Images can be obtained in both standard secondary emission, showing topography and backscatter mode allowing differing materials to be seen visually. Additionally, there is a JEOL 6000 benchtop SEM for fast turnaround images and elemental analysis. To the side are example SEM images of AFM probes.



Courtesy of Nunano



Courtesy of Nunano

Electrical Characterisation

The labs contain a full suite of electrical characterisation equipment, for measurements both on wafers and on packaged devices. We have the capability to test a whole range of devices, such as memory chips, AI hardware, sensor modules and RF receivers.

We have a Cascade MicroTech Summit 12000 automated probestation for wafer-level measurements. It is optimised for fully automatic probe card measurements of entire wafers up to 200 mm in size. Its features include:

- Manual probing with options for 2 and 4-point measurements
- Probe card integration for fully-automatic probing
- Wafers up to 200 mm
- Temperature control between -60°C and 300°C

Within the labs we have the equipment and expertise to conduct a whole range of electrical measurements. The Keithley 4200 parameter analyser can conduct high-precision IV and CV measurements. The R&S ZNB40 vector network analyser allows precise parameter measurements over a frequency range of 9 kHz to 4.5 GHz. It is ideal for mobile, radio and high-speed PCB applications. It can be used in conjunction with a manual probestation which is setup specifically for RF and microwave testing.

Other significant capabilities include:

- PCB testing and rework
- Zeiss confocal microscope, ideal for high-quality images of semi-transparent samples
- Fume cupboards for wet processing and testing applications

Get in touch

To discuss your specific interests and requirements, please contact:

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