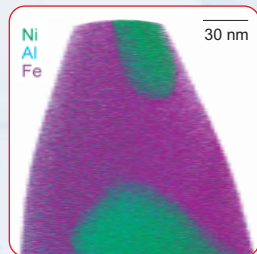


# Atom Probe Tomography

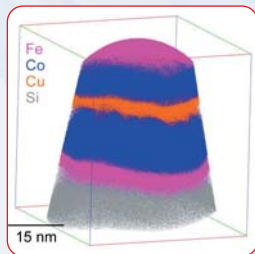
Friday 20th September 2019, 10 to 12:00

CIME seminar

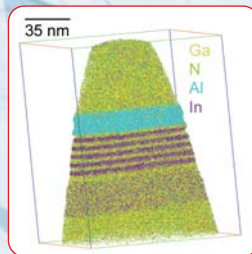
room: ELG-120



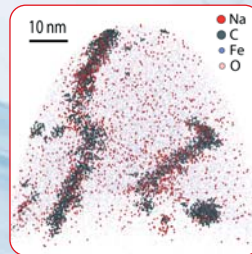
Advanced Alloys



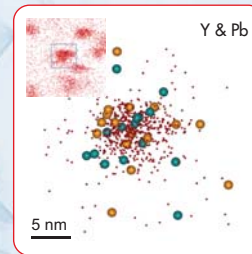
Thin Films



III/V LEDs



Biomaterials



Geochemistry

In the 15 years or so since the introduction of the first commercially-available Atom Probe Tomography (APT) instruments the improvements in the capability of the technique have been quite remarkable. Whilst still maintaining the unique capability to detect, identify and position individual atoms with near atomic resolutions in three dimensions, analysis volumes have increased dramatically, improved detector performance and mass resolving power has produced real enhancements in detection sensitivities, compositional accuracy and precision, and the introduction of laser mode has enabled analysis of very many material systems beyond traditional bulk metals. In addition, the maturation of FIB-based specimen preparation methods has made site-specific analyses truly routine. This seminar will provide a brief overview of the APT technique and its evolution and will include a broad range of examples of state of the art applications ranging from metals, semiconductor device structures analyses to the characterization of ceramics, bio minerals and functional materials.

## PROGRAM

### I. Principle of Local Electrode Atom Probe (LEAP®)

- Evolution of Atom Probe instrumentation
- Operating principle with high voltage and laser pulsing
- Advanced specimen transfer UHV + Cryo

### II. Sample preparation

- Specimen requirements for APT
- Electro-polishing for metal
- Site-specific FIB lift-out method
- Correlative microscopy examples

### III. Applications

- Metal and functional materials
- Data storage and semiconductor
- Nano materials and nano wires
- Bio applications

## SPEAKER



**Peter Clifton** graduated in Physics at the University of Birmingham, UK. After his post-doctoral research in data storage materials, he joined Segate Technology in 1998 where he was a key contributor to the pioneering application of APT for wafer-deposited thin film structures. In 2004, he joined Oxford Nanoscience Ltd as a senior

atom probe scientist and was involved in the development of both the large angle reflectron and laser atom probe instrumentation. With the purchase of ONS by Imago Scientific Instruments and then the merger of Imago with CAMECA, Peter became increasingly focused on technical sales. His research interests are concentrated on increasing the range of materials that can be usefully analyzed by APT and removing the barrier to widespread adoption of this exciting technique. He has presented invited talks at a wide variety of international conferences and published more than 30 papers.

