

Oxford NanoScience Sells First 3D Atom Probe to China

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The first commercial 3 Dimensional Atom Probe (3DAP) has been sold into the People's Republic of China. This milestone purchase of an instrument which brings a unique approach to materials characterisation, has been made by the Institute of Materials, Shanghai University. The instrument provides materials scientists with the ability to simultaneously determine the spatial position and chemical identity of individual atoms in conducting materials. The Institute will be using it in studies of aluminium alloys and high strength steels.

Oxford NanoScience managing director, Richard Davies, said: “This first commercial sale of a 3DAP into China highlights the determination of of the country to utilise the latest technology and techniques available. 3DAP offers the materials scientist a unique way of being able to correlate structure at the atomic level with properties at the macro level, such as material strength and hardening”. “We would also like to thank the British Consulate S & T staff in Shanghai”, he continued, “who have been extremely helpful in providing advice which has enabled the sale to progress smoothly”.

The announcement of this order provides the perfect springboard for the ‘Year of British Science in China, 2005’, a programme of science to science events targeting primarily specialists and officials, which will be open to major UK scientific bodies. This year-long event will be officially launched in Shanghai on January 19, 2005 by Lord Sainsbury of Turville, the UK’s Parliamentary Under Secretary of State for Science and Innovation.

3D Atom Probe:

Developed by Professors George Smith, FRS & Alfred Cerezo at Oxford University, the Three Dimensional Atom Probe (3DAP) is capable of mapping the chemical identity and 3-dimensional position of individual atoms within a conductive sample with single atom depth resolution and sub-nanometer lateral resolution. The 3DAP evaporates and identifies each atom individually and is therefore capable of very high sensitivity. The 3DAP is a powerful tool for nanoscale materials analysis and has been successfully used in a wide variety of application areas. Initial customers are alloy and steel developers and materials researchers worldwide.

The 3DAP includes atom probe, imaging and analysis software and an Ultra-High Vacuum system (UHV). The 3DAP provides the best mass resolution (on a full width tenth maximum basis) currently available on an atom probe enabling even the smallest peaks to be resolved and identified even when in the proximity of a much larger peak. In other words, the peaks (which represent different atomic compositions) on the mass spectra obtained using the 3DAP have much smaller tails than those obtained using similar tools offered by competitors. This is particularly important when analyzing materials containing atoms with very similar mass-to-charge ratios such as complex alloys and alloy steels.

The 3DAP is provided with proprietary software used to visualize the 3-dimensional arrangement of atoms in the volume analyzed. The software also allows sophisticated data analysis and manipulation.

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