

**Centre for Microscopy and Microanalysis (CMM)**  
**The University of Queensland**  
**Nanostructural Analysis Network Organisation**  
**Major National Research Facility**

## 2 Weeks of EM-based Training at the CMM

**With Steve Chapman (Protrain) and Luc Harmsen (Anaspec cc South Africa)**

Course  
**1**

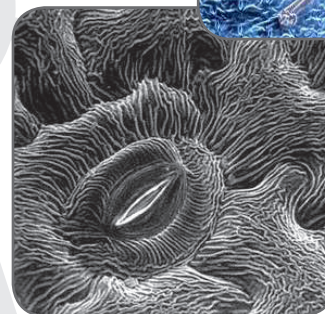
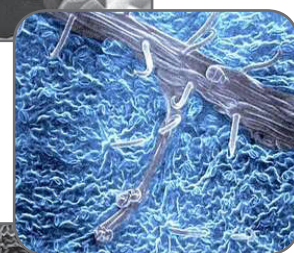
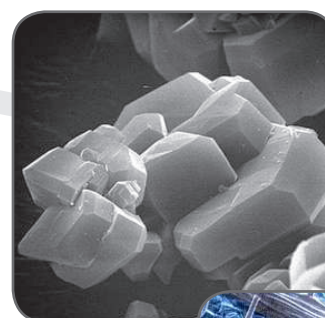
### **Understanding and Optimising SEM and EDS Performance**

**Monday 4 June until Friday 8 June 2007**

**Cost: AUD 700.00 plus GST**

In a round-table illustrated discussion, you will be taken through the theory and practice of the operation of the scanning electron microscope, from basic through to advanced levels. In addition, the course will cover specimen preparation techniques and coating procedures in general, as well as those specific to your own specimens.

The practical periods will offer you the opportunity to evaluate instrument performance over a wide range of accelerating voltages and make appropriate modifications to the set-up in order to optimise the instrument's performance. In this way, gun and specimen geometry may be better understood and you will be able to raise your skill levels to bring better performance from an instrument than the manufacturer claims. All students will operate the instruments themselves and develop their own talents. Under the eagle eye and guidance of Steve and Luc everyone learns!



Course  
**2**

### **Monitoring and Maintaining the Electron Microscope**

**Monday 11 June until Friday 14 June 2007**

**Cost: AUD 950.00 plus GST**

This course is designed to lead you through all that is required to fully understand an SEM, a TEM and an EDS system. You are guided through the functions of all parts of the instruments in far greater depth than required to simply operate the machine. The course will cover all the areas that will help you to judge a problem, fix it yourself, or have the correct information to be able to talk knowledgeably to service staff.

We will demonstrate how the units of SEM and TEM columns work, gun, lenses and deflection coils, as well as the structure of the EDS detector. Further, we will discuss the components of the vacuum system, how they work and how they relate to each other when in operation. We will cover the components and the structure of the electrics and electronics before we continue with the alignment of the microscopes, the basic maintenance of the instruments and the gun, column liners, scintillators, screens, filament alignment and flaming apertures.

The course then will move on to monitoring the performance of the systems, resolution, and the calibration of magnification, drift rate and contamination rate. This includes general advice on high-resolution operation of the microscopes and the desired settings for performance. The final topic of the course deals with analysing instrument performance, the typical problems found and routes to their solutions.

Supported and funded by



*For further information please contact*



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