



Rapid analysis assists production quality

"The Scanning Electron Microscope (SEM) can produce images of a surface with a finely focused electron beam enabling detection of features that are only 1 nm apart.

Energy dispersive X-ray spectrometer (EDS) performs quantitative chemical analysis while creating an SEM image.

X-ray diffraction (XRD) can produce information by bombarding the sample with a finely focused radiation beam. Crystalline phases can be identified and quantified and crystal structure can be studied.

Time of Flight Secondary Ion Mass Spectrometry (ToF-SIMS) utilises a pulsed primary ion beam, typically Ga+ or Cs+, to remove atoms and molecules from the very outermost surface of the sample. This technique is used to analyse organic and inorganic materials (films, particles, cross sections). It provides information about the sample surface; however, it can also be used to monitor the variation of chemical composition with sputtering time (depth profile)."

Chemetall (Australasia) Pty Ltd is a long-term supplier of metal pretreatment systems to the metal finishing and automotive manufacturing sectors all around the world.

As part of its commitment to quality, Chemetall regularly checks the performance of its operating systems. For zinc phosphating, an examination of the crystal structure formed on the metals gives a good indication of the quality of the process, and the corrosion resistance of the finished product. By also measuring the "P ratio" of the coating on cold rolled steel, further information on the corrosion resistance can be gauged. Rather than wait for the onset of long term corrosion, the use of high tech analysis provides immediate feedback for controlling the quality of pretreatment coating.

By using the resources of The Ian Wark Research Institute, (University of SA) for

- SEM analysis of crystal morphology,
- EDX for coating analysis during troubleshooting,
- XRD for P ratio determination and
- ToFSIMS for further coating analysis,

Chemetall is able to get a faster turnaround than would be possible if they were to send samples interstate or overseas.

Chemetall believes that the quality and consistency of the analyses enables them to confidently offer solutions to their customers' problems and optimize their processes.

"Without these facilities in Adelaide we would not be able to offer our customers the same efficiency or assurance of their process quality," says Trevor Green, National Technical Services Manager - Surface Treatment, at Chemetall. "This service has also allowed our interstate and New Zealand colleagues to send samples of other processes to The Wark for analysis and problem solving.

The Wark is the SA Branch (and one of the six founding members) of Future Materials.

Founding partners

