TOF Sims for material characterisation

Time of Flight Secondary Ion Mass Spectroscopy (TOF Sims) is a powerful technique used in material characterisation. Various samples can be characterise with this technique including powders, thin films, metals, insulating materials like glass and polymers, dried biological samples, rocks and even soil samples. Since such a variety of samples can be analysed this technique is ideal for interdisciplinary research. It is a very sensitive technique and can detect concentrations in the part per billion (ppb) range. This makes it ideal to detect dopants in phosphors and semiconductor materials. It is also extremely surface sensitive and can give elemental information from the first few nanometres of a sample. The system is equipped with three sputter guns which allows depth profiling of any material. The Ar sputter gun can be used to make a depth profile of organic materials keeping the large organic molecules intact, making identification of these materials so much easier.

Some of the research projects that involved the TOF Sims:

- Dopant distribution in phosphors powders.
- Depth profiling of multilayer metal samples and solar cells.
- Detection of oxygen isotopes in micro meteorites.
- Identifying different lipids in fat cells.
- Determination of metal distribution in polymers for use is batteries.