

“Mastering the Art of Sample Preparation”

Birgit Hagenhoff

Tascon GmbH, Mendelstraße 17, 48149 Münster, Germany
birgit.hagenhoff@tascon-gmbh.de

Secondary Ion Mass Spectrometry (SIMS), in particular Time-of-Flight (ToF) SIMS has developed into a routine tool for screening the chemical composition of surfaces. The technique allows to detect both, atomic and molecular compounds simultaneously with sensitivities down to the ppm and fmol level. SIMS is a very surface sensitive analytical tool, with information mainly coming out of the uppermost 1-3 monolayers of a surface.

A successful SIMS experiment generally involves the following steps: experimental design (selection and taking of samples and specimen), sample preparation, selection of suited analytical modes, data acquisition, data evaluation, and reporting. As this is a linear chain, a good result can only be obtained when any link in this chain has a high performance. Therefore, specific care needs to be taken when selecting and taking the specimen as well as during the actual sample preparation. This short course will focus on these two aspects.

The presentation will start with a short review of specific SIMS features which will influence the sample selection and preparation process. This part will focus on typical data acquisition areas, influence of topography on the results as well as the influence of surface contaminants on the analytical result.

The second part of this short course will show how to address the different challenges in daily routine analysis. Guidelines will be given what to take into account when taking and preparing samples for (ToF)-SIMS analysis. These aspects will be discussed along selected case studies.

Topics: selection of specimen, taking of specimen, sample contamination, experimental parameters influencing sample preparation, effects of sample topography, effects of sample charging

Requirements: there are no special requirements for this course.



Fig. 1: lateral distribution of silicone (from hand lotion) on the surface of a 2 € coin