

TOF-SIMS

Large Area Mapping

Manufacturing process problems such as organic and inorganic contamination, corrosion and cleaning residues often occur on a scale much larger than the field of view of traditional micro analysis techniques. The fully automated stage stepping acquisition mode allows the analysis of large sample areas of up to $9 \times 9 \text{ cm}^2$.

Large Area Mapping

Expanding the field of view

In TOF-SIMS, the maximum image size which can be addressed by scanning the primary ion beam is $500 \times 500 \mu\text{m}^2$. If chemical mapping is required to analyse the distribution of, for example, a contamination of a larger area, then the stage stepping acquisition mode can be used. In this mode a series of small images is sequentially acquired and stitched together automatically. This allows areas of up to $9 \times 9 \text{ cm}^2$ to be scanned with a resolution of a few hundred pixels per mm.

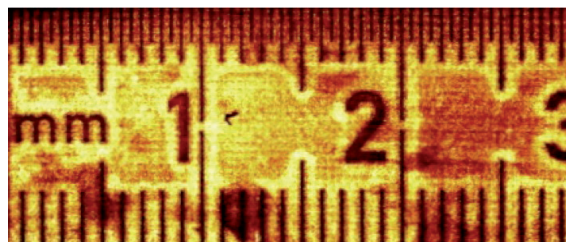
Flexible image arrangements

The stage stepping acquisition mode is very flexible and a variety of image mosaics such as rectangular, square or circular image arrangements are available.

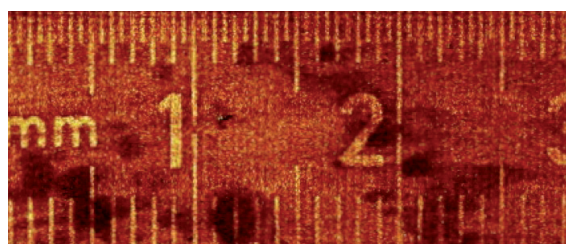
Finding the right spot

The large area mapping can also be used to find interesting locations upon a large sample. Using the software, a position in an image can be selected and the sample stage will automatically drive to the newly chosen location at which a more detailed analysis may be carried out.

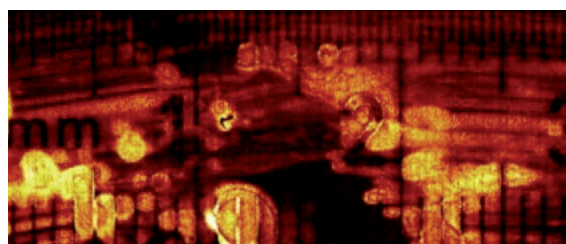
Field of view: $3.0 \times 1.5 \text{ cm}^2$



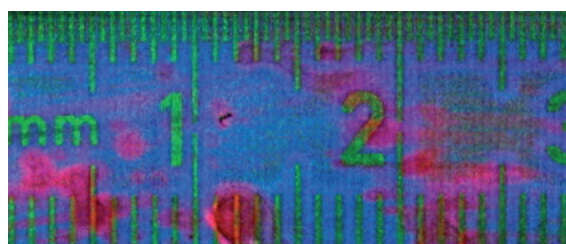
Cr



$\text{C}_x\text{H}_y\text{O}$

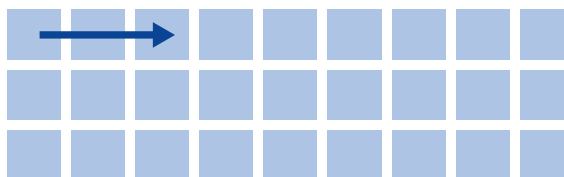


Siloxane



Overlay (Cr, $\text{C}_x\text{H}_y\text{O}$, Siloxane)

Large area chemical mapping of centimetre metal ruler with a pixel resolution of 100 pixels per mm.



Schematic of a large area mapping in image stitching mode. The maximum size of single images is $500 \times 500 \mu\text{m}^2$. The instrument software allows for a flexible adjustment of the image resolution in pixels per mm.