



# Scanning Electron Microscopy and Microanalysis (SEM-EDS)

The Environmental Scanning Electron Microscope (ESEM) allows observation of samples or small objects at high magnification (up to about 100.000X) without needing to manipulate or treat them. Although it can be used on untreated objects or samples, in some cases, such as in stratigraphic studies, and the examination of inclusions and micro-textures, samples should be subjected to appropriate preparation. An electron beam scans the surface of the material and their interaction is detected by sensors which transform the signal into images using shades of grey. Depending on the mode of observation, the scanning electron microscope provides valuable information on the topography of the sample surface, its microstructure and micro-texture, and causes of degradation. A dedicated detector, enables the analysis of X-ray fluorescence emitted by areas irradiated by the beam to be carried out, allowing for qualitative and quantitative elemental chemical analysis with high spatial resolution.