Electron microscopy for morphological and composition analysis

Preface

Scanning electron microscope (SEM) can be used to study the wide range of samples, such as metals, semiconductors, ceramics, samples related to biological and medical applications. In addition to basic scientific research, the application of microscopes can be expanded also to the quality control at industrial site. Morphological and composition analysis of different type of samples possible in our laboratories with JEOL IT500HR/LV and ThermoScientific Scios2 DualBeam microscopes.

Infrastructure

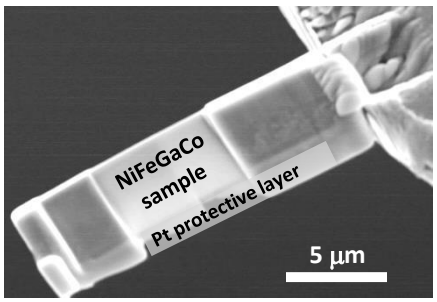
JEOL IT500HR/LV

JEOL type microscope for high and low vacuum image observation. Equipped with energy dispersive X-ray spectrometer (EDS) for composition analysis, with a cathodoluminescence detector for visualization of insulating solid materials (e.g. quartz and calcite) and Raman-interface for chemical analysis of a selected part of the sample surface.

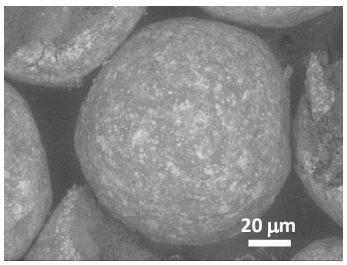
Dual beam microscope equipped with Ga^+ ion source for preparation of cross-sectional samples for more detailed analysis and e.g. transmission electron microscope (TEM) examination

Scios2 Dual Beam FIB-SEM

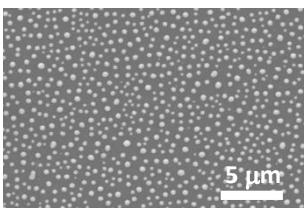
Example



TEM lamella prepared from NiFeGaCo shape memory alloy

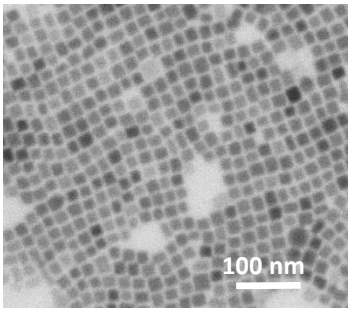


Back scattered image of drug particles examined for industry. Image taken in low vacuum mode, no gold deposition applied on sample for prevent the charge accumulation



Silver nanoparticles on oxidised Titanium surface for dental application

$CsPbBr_3$ nano-crystals with average size of 20x20 nm. Scanning transmission electron microscopy (STEM) image with Scios2 microscope



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