Challenges of sample preparation for cross sectional EBSD analysis of electrodeposited nickel films

Thorough microstructure and crystallographic orientation analysis of thin films by means of electron backscatter diffraction requires cross section preparation of the film-substrate compound. During careful preparation, changes of the rather non-stable as-deposited microstructure must be avoided. Different procedures for sample preparation including mechanical grinding and polishing, electropolishing and focused ion beam milling have been applied to a nickel film electrodeposited on top of an amorphous Ni-P layer on a Cu-substrate. Reliable EBSD analysis of the whole cross section can be obtained by mechanical polishing with colloidal silica followed by either short electropolishing or gentle milling with low current of the focused ion beam.