

## **Materials Characterization**

Written by Kamoutsi Eleni

Wednesday, 29 December 2010 19:38 - Last Updated Wednesday, 16 March 2011 21:54

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Materials characterization includes all the necessary laboratory analysis in order to establish the identity of an alloy. The analyses include

**Chemical analysis** in order to define the chemical composition of the alloy

**Metallography** in order to define the microstructure (grain size, phase identification and distribution)

**Scanning Electron Microscopy (SEM)** in order to identify microstructural features in high magnification and conduct local chemical analysis by EDAX (energy-dispersive analysis with X-rays)

**Atomic Force Microscopy (AFM)** for high magnification characterization of surfaces

**Hardness and microhardness testing** in order to define the hardness of materials, from the hardness of a heat treated tool steel to the hardness profile of a nitrated mold used in the Aluminum extrusion industries.

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