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Making and using atomically defined nanotips

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Atomically defined tips gained significant attention over the past decades to be used as gas field ion sources (GFISs) for helium ion microscopy (HIM) and non-staining ion beam writing applications, electron sources for high resolution SEM, TEM and electron holography, as well as scanning probe microscopy, namely STM and AFM. Single atom tips (SATs) represent a unique subgroup of atomically defined tips where nanotip apex is terminated by a single atom.
In this presentation we will review field ion microscopy (FIM) technique to visualize individual surface atoms of sharp probes and discuss etching process to form atomically sharp nanotips. We will outline characterization methods to evaluate nanotip shape and performance as high brightness GFIS. We will also present scanning probe microscopy images demonstrating unique properties of single atom nanotips.

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