

## The Atom-Probe Field Ion Microscope

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A serious limitation of the field ion microscope has been its inability to identify individually imaged atoms. An Atom-Probe FIM, consisting of a combination probe hole FIM and mass spectrometer having single particle sensitivity, will be described. During operation, the observer selects an atomic site of interest and places it over the probe hole. Pulsed field evaporation sends the chosen particle through the hole and into the spectrometer section which may be of the magnetic sector or time-of-flight type. Each has its own special advantages depending upon the particular application. These might include: identification of bright atom spots in the controversial adsorption experiments, investigation of the atomic nature of impurity and interstitial atom spots, analysis of segregations and precipitations, or the investigation of short range order in alloys. In some cases an adjustable probe hole covering an area of several atomic sites is advantageous. Experiences with a prototype time-of-flight instrument and its progeny will be reported. Memories of Erwin W. Müller who died on May 17, 1977 will be shared.