



MODEL 1080

PicoMill[®] TEM specimen preparation system

Combines an ultra-low energy, inert gas ion source and a scanning electron column with multiple detectors to yield optimal TEM specimens.

Model 1080 PicoMill[®] TEM specimen preparation system specifications

Applications	<p>Primary: Microelectronics and semiconductor transmission electron microscopy (TEM) specimen preparation</p> <p>Secondary: Any other specimens requiring optimal results</p> <p>Ideal for when FIB preparation is combined with aberration corrected TEM</p>
Ion source	<p>Filament-based ion source combined with electrostatic lens system</p> <p>Variable voltage (50 eV to 2 kV), continuously adjustable</p> <p>Beam current density up to 8 mA/cm²</p> <p>Beam size < 1 μm</p>
Electron source	<p>Accelerating voltage up to 15 keV</p> <p>Working distance of 16 mm</p> <p>Faraday cup for electron beam current monitoring with a range of 1 to 2,000 pA</p>
Goniometer	<p>TEM style</p> <p>X, Y, and Z axes movement and α tilt</p> <p>Specimen exchange of < 30 seconds</p> <p>Milling angle range of -15 to +90°</p> <p>Viewing range -15 to 180°</p>
Holder	<p>Side-entry, TEM-style holder</p> <p>Single-tilt with $\pm 20^\circ$ in-plane rotation</p>
Ion beam targeting	<p>Ion beam can be targeted to a specific point on the specimen surface or scanned within a selected area</p>
User interface	<p>Menu-driven with system status displayed</p>

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Gas	Ion source gas: UHP 99.999% argon Gas control: Automated using mass flow control technology Pneumatic supply: Compressed dry air or dry nitrogen at 2 to 7 bar
Imaging	Secondary electron detector/Everhart-Thornley detector <ul style="list-style-type: none">• Electron imaging with 2 mm field of view• Ion-induced secondary electron imaging with 1.9 mm field of view• Specimen image displayed on PicoMill system user interface Solid-state backscatter electron detector Solid-state scanning/transmission electron (STEM) detector
Vacuum system	Turbomolecular drag pump backed by an oil-free diaphragm pump Specimen chamber pressure: <ul style="list-style-type: none">• Base vacuum of 3×10^{-6} mbar• Operating vacuum of 1×10^{-4} mbar Electron column: Base vacuum of 1×10^{-6} mbar Specimen goniometer: Atmosphere to 1 mbar (pre-pump) Vacuum gauges: <ul style="list-style-type: none">• Cold cathode for specimen chamber and electron column• Pirani gauge for goniometer
Automatic termination	Termination by time, electron signal, or manual process
Dimensions	76 in. (194 cm) width x 56 in. (143 cm) height x 36 in. (92 cm) depth
Weight	600 lb. (273 kg)
Power	220-240 VAC, 50/60 Hz, 1,100 W
Warranty	One year
Service contract	Download service contract information

*Standard side-entry TEM specimen holders cannot be used in the PicoMill system because they do not provide access to the specimen for ion milling. However, the PicoMill system holder can be used in both the PicoMill system and in corresponding electron microscopes.



E.A. Fischione Instruments, Inc.
9003 Corporate Circle
Export, PA 15632 USA
Tel: +1 724.325.5444
Fax: +1 724.325.5443
info@fischione.com
www.fischione.com

The PicoMill TEM specimen preparation system is the subject of United States Patent Nos. 7,132,673 and 7,504,623. Other patents pending. PicoMill is a registered trademark of E.A. Fischione Instruments, Inc.
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