



# MODEL 1061

## SEM Mill

A state-of-the-art ion milling and polishing system. It is compact, precise, and consistently produces high-quality scanning electron microscopy (SEM) samples in the shortest amount of time for a wide variety of applications.

### Model 1061 SEM Mill specifications

#### Ion sources

Two TrueFocus ion sources

Variable energy (100 eV to 10.0 keV) operation

Beam current density up to 10 mA/cm<sup>2</sup>

Milling angle range of 0 to +10°

Choice of single or dual ion source operation

Manual or motorized (optional) ion source angle adjustment

Independent ion source energy control

Adjustable spot size

Faraday cups for the direct measurement of beam current from each ion source; allows optimization and adjustment of the ion source parameters for specific applications

#### Sample stage

Sample size:

- Cross section\*  
Maximum: 0.39 x 0.39 x 0.157 in. (10 x 10 x 4.0 mm)  
Minimum: 0.12 x 0.12 x 0.028 in. (3 x 3 x 0.7 mm)
- Planar  
1.25 in. diameter x 1 in. height (32 x 25 mm)

Automatic sample thickness sensing to establish the milling plane and maximize throughput

360° sample rotation with variable rotation speed

Sample rocking

Magnetic encoder provides absolute positioning accuracy

\* Standard size; other sizes available upon request.

**Model 1061 SEM Mill specifications**

<b>Cross-section station (optional)</b>	<p>Produces pristine cross-section samples</p> <p>Allows precise positioning of the area of interest – x, y, and <math>\theta</math></p> <p>Effective for use with a wide variety of materials, including semiconductor devices, multilayers, ceramics, and hard/brittle materials</p> <p>Prepared region of interest is flat and free from damage for subsequent SEM imaging and analysis</p> <p>Accommodates a wide range of sample and mask sizes:</p> <ul style="list-style-type: none"> <li>• Sample and mask align both laterally and angularly</li> <li>• Multiple uses from a single mask</li> </ul>
<b>Sample cooling (optional)</b>	<p>Liquid nitrogen conductive cooling with integral dewar and automatic temperature interlocks</p> <p>Achieves temperatures better than <math>-170\text{ }^{\circ}\text{C}</math></p> <p>Dewar access positioned close to instrument operator</p> <p>Ability to program and maintain a specific temperature between ambient and cryogenic</p> <p>Choice of:</p> <ul style="list-style-type: none"> <li>• Standard dewar capacity (3 to 5 hours of cryo conditions)</li> <li>• Extended dewar capacity (18+ hours of cryo conditions)</li> </ul>
<b>Automatic termination</b>	<p>Automatic termination by time or temperature</p>
<b>Vacuum system</b>	<p>Turbomolecular drag pump and an oil-free, multi-stage diaphragm pump</p> <p>Vacuum sensing with a cold cathode, full-range gauge</p>
<b>Vacuum or inert gas transfer capsule (optional)</b>	<p>Allows transfer or storage of a sample at vacuum or in an inert gas environment</p>
<b>Process gas</b>	<p>UHP argon (99.999%); nominal 15 psi delivery pressure required</p> <p>Automatic gas control using two mass flow controllers</p>
<b>User interface</b>	<p>Instrument operation controlled via 10-inch, ergonomically adjustable touch screen</p> <p>Stack light indicator for determining milling operations status from a distance (optional)</p>

**Model 1061 SEM Mill specifications**

**Microscope (optional)**

Load lock window accommodates the following microscopes:

- 7 to 45X stereo microscope attachment for direct specimen observation
- 525X high-magnification microscope and CMOS (complementary metal oxide semiconductor) camera system for site-specific image acquisition and display
- 1,960X high-magnification microscope and CMOS camera system for site-specific image acquisition and display

**In situ viewing and imaging**

Sample can be monitored in situ in the milling position when using either the stereo or the high-magnification microscope  
Viewing window protected by a programmable shutter that prevents buildup of sputtered material and preserves the ability to observe the sample in situ

**Sample illumination**

Both the high-magnification and stereo microscopes have light sources that provide top-down, user adjustable, reflected sample illumination

**Enclosure**

Width (includes room on either side for service access: 50 in. (127 cm)

Height:

- Minimum height (without microscope or stack light options): 32 in. (61 cm)
- Maximum height (with stack light option): 38 in. (77 cm)

Depth (includes room for service access and exhaust fan air flow): 40 in. (102 cm)

Enclosure design offers easy access to internal components when performing maintenance tasks

**Weight**

161 lb. (73 kg)

**Power**

100/120/220/240 VAC, 50/60 Hz, 720 W

**Warranty**

One year



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

©2017 E.A. Fischione Instruments, Inc. All rights reserved.  
The Model 1061 SEM Mill is the subject of United States Patent No. 9,214,313.

Document Number SP1061 Revision 03 10/2017