



# MODEL 1040

## NanoMill® TEM Specimen Preparation System

The NanoMill system uses an ultra-low energy, concentrated ion beam to produce the highest quality specimens for transmission electron microscopy.

### Model 1040 NanoMill® TEM Specimen Preparation System Specifications

#### Ion source

Filament-based ion source combined with electrostatic lens system

Variable voltage (50 eV to 2 kV), continuously adjustable

Beam current density up to 1 mA/cm<sup>2</sup>

Beam diameter as small as 1 μm at 2,000 eV

Faraday cup for ion beam current monitoring with a range of 1 to 2,000 pA

Field-replaceable apertures

#### Specimen stage

Load lock allows specimen exchange in less than 10 seconds

Transfer rod for specimen exchange

Milling angle range of -12 to +30°

#### Vacuum system

Turbomolecular drag pump backed by an oil-free diaphragm pump

Chamber vacuum measurement with a combination cold cathode and Pirani gauge with a range of atmosphere to 1 x 10<sup>-8</sup> mbar

System base vacuum of 3 x 10<sup>-7</sup> mbar

Operating vacuum of 1 x 10<sup>-4</sup> mbar

#### Gas

Automated using mass flow control technology

Flow rate up to 2 sccm

Integral particulate filter

Inert gas (argon) with recommended purity of 99.999%

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|                              |   |
|------------------------------|---|
| <b>Specimen targeting</b>    | Ion beam capable of being targeted at one spot on the specimen surface or scanned within a selected area  |
| <b>User interface</b>        | Menu-driven interface<br>Programmable milling cycles with system status displayed   |
| <b>Chamber illumination</b>  | User-controlled chamber illumination to facilitate specimen exchange  |
| <b>Specimen cooling</b>      | Liquid nitrogen conductive cooling with automatic temperature interlocks<br>Stage temperature to $-170^{\circ}\text{C}$<br>System cool-down time less than 20 minutes<br>Specimen cool-down time less than 5 minutes<br>Dewar hold time up to 6 hours |
| <b>Automatic termination</b> | Process termination by time or temperature  |
| <b>Imaging</b>               | SED-based imaging technology<br>3 mm field of view<br>Everhart-Thornley detector<br>Specimen image displayed on graphical user interface  |
| <b>Dimensions</b>            | 39 in (991 mm) width x 58 in (1,474 mm) height x 31 in (788 mm) depth   |
| <b>Weight</b>                | 507 lb (230.5 kg)   |
| <b>Power</b>                 | 110/220 V AC, 50/60 Hz, 1,000 W   |
| <b>Warranty</b>              | One year  |
| <b>Service contract</b>      | Available upon request  |



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The NanoMill® system is the subject of United States Patent Nos.  
7,132,673 and 7,504,623. Other patents pending.  
Document Number SP1040 Revision 01 10/2018