



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076

Reference No. 69 PR No. 1000017980 (Rfx No. 6100000741)

Detailed Technical Specifications for External pattern generating system.....

ITEM	PRODUCT DESCRIPTION
	External pattern generating system for electron beam lithography using a field-emission scanning electron microscopy (FE-SEM)
1. Hardware	<p>A. Should be capable of controlling the X-Y motion of the sample stage of the FE-SEM system. The precision of the X-Y motion control should allow patterning of features, with size and separation of 10 nm or smaller, and alignment accuracy of 20 nm or better. The system must have 16-bit DACs for beam positioning with 5 MHz or higher speed, and 16-bit ADC inputs for image acquisition.</p> <p>B. Should be able to read the beam current from an external pico-ammeter and the Faraday cup.</p> <p>C. Should be able to control the beam blanker of the FE-SEM system</p> <p>D. Should include all the required cables to connect to the FESEM system</p> <p>E. Should have the required PCIe card and/or USB 3 communication for all controls.</p> <p>F. Should include a workstation PC with 8 GB RAM, 500 Gb Hard Disk, DVDRW Drive, wheel mouse, LAN, USB, Serial Port.</p> <p>G. Should be compatible with all the leading FE-SEM systems available in India</p>
2. Software	<p>A. Should include the required software's for design and electron-beam writing of all patterns, with features of size and separation 10 nm or smaller. It should be possible to write filled polygons of arbitrary shapes, such that all scan lines filling a polygon are parallel to each other in a direction specified by the user. The system must be able to</p>

	<p>write arrays of a single pattern where the doses for the array elements can vary over a user defined range, and individual elements can be chosen to be omitted.</p> <p>B. The system must have the flexibility to manually and automatically align to registration marks of any shape, and to automatically align to inside or outside corners of large features, when only a portion of the total feature is imaged.</p> <p>C. Detailed instructions for use of the software and tutorials for running the process should be included in the user manual of the software.</p> <p>D. The patterning software should allow exposure at different doses and at different write field sizes in one step, without manual intervention.</p> <p>E. Should allow trial-run option to verify time-estimate for lithography and verification of the pattern to be written.</p> <p>F. At least 5 licences for the design software (CAD type) should be included in the bid. The lithography process software must be an unlimited site license, for unlimited number of users to use/test.</p>
<p>3. Track record, Warranty & Technical support</p>	<p>A. Should provide a list of 25 or more national and/or international users, using the system for electron beam lithography</p> <p>B. Should provide comprehensive warranty for a period of 1 year or more.</p> <p>C. Should provide remote/online technical support beyond the warranty period.</p>