

## Technical specifications of Ellipsometer

S.No	System Parameters	Specifications	Complied/Not complied	Reference page no
1	System Requirements: General	<p>190 nm to 1000 nm in the spectral range. Future upgrades to NIR with a wavelength of up to 1700 nm should be possible.</p> <p>Ellipsometric contrast live image of the sample with a 2 <math>\mu</math>m lateral resolution.</p> <p>Ability to observe birefringence and anisotropy using the anisotropic imaging Ellipsometry technique</p> <p>Every pixel of the imaged surface area must be able to measure the ellipsometry data (delta and psi)</p> <p>Record ellipsometric enhanced contrast micrographs and be able to stitch them for larger areas</p> <p>Equipped with a focus scanner to enable fully focused images on solid substrates</p> <p>Measurement refractive index, volume fraction of mixed material, absorption and film thickness, uniformity of films, at different wavelengths and angle of incidence.</p>		
2	Goniometer	<p>Automatic goniometer for measurements at different angles of incidence with an accuracy of 0.05° or better and with angle resolution of 0.003° or better</p> <p>Software-controlled goniometer, and motorized X-Y movement</p> <p>It must be possible to select the area of interest for the measurement of high-resolution spectra and variable angle spectroscopic ellipsometry</p>		
3	Light source and spectral range	<p>High quality monochromatic scientific cameras, sensitive for the wavelength range 190 nm to 1000 nm.</p> <p>The instrument should consist of laser-stabilized Xenon source, continuous emission on full wavelength range with typical lifetime of 9000h, nitrogen purging (optional).</p>		

4	Motorized X-Y Stage	<p>The stage must hold large samples up to 100 mm, to small sample pieces with accuracy of 2 <math>\mu\text{m}</math> (x and y) or better and precision of 2 <math>\mu\text{m}</math> (x and y) or better</p> <p>Fully automatic X-Y stage movement 100 x100 mm and automatic height and tilt adjustment.</p> <p>Dedicated software tools for image stitching, pattern measurement</p> <p>Integrated theta stage with the possibility of rotation for anisotropic materials Automatic sample alignment with respect to the plane of incidence (Max. tilt ranges: 6° or better, accuracy: 0.002° or better, precision: 0.002° or better in both tilt axes)</p> <p>Alignment sensor to detect tilt and Z-position of the sample</p>		
5	Anisotropic imaging Ellipsometry	<p>Imaging anisotropic Ellipsometry with minimum of 11 elements for imaging, characterization of anisotropic thin films and visualize birefringence</p> <p>Characterization of isotropic &amp; non isotropic regions as small as 2 <math>\mu\text{m}</math> or better lateral resolution</p> <p>Should be able to select the region of interest on a single or multiple in parallel and to select areas of interest as low as 1 <math>\mu\text{m}</math> or better to evaluate refractive index and thickness of individual materials as well as heterostructures</p> <p>The imaging anisotropic measurement is limited to a wavelength range of 400 nm to 900 nm</p> <p>The software should support the optical modeling of anisotropic layers and substrates</p> <p>Dedicated software tools (e.g., for studies of in-plane anisotropy) included</p>		
6	Customized Fluorescence capabilities	<p>The systems should support customized fluorescence filters and its supporting port should be quoted.</p>		
	<p>a) BeamCutter</p> <p>b) Objective for Imaging</p>	<p>A special aperture technique for the elimination of backside reflection on very thin (&gt;20<math>\mu\text{m}</math>), transparent substrates.</p> <p>One 10x objective lens with a field-of-view (X direction): 0.4 mm or better, lateral ellipsometric resolution: down to 2 <math>\mu\text{m}</math> or better</p> <p>The instrument should have one 20x objective lens with a field-of-view (X</p>		

	c) Camera	<p>direction): 0.2 mm or better, lateral ellipsometric resolution: down to 1µm or better</p> <p>One 50x objective lens with a field-of-view (X direction): 0.07 mm or better, lateral ellipsometric resolution: down to 0.6 µm or better</p> <p>Equipped with high quality monochromatic scientific cameras (Back-illuminated CMOS UV camera and CCD camera), sensitive for the wavelength range 190 nm to 1000 nm.</p> <p>The UV camera should have 2048 x 2048-pixel resolution or better, pixel size: 6.5µm x 6.5µm or better, frame rate: max. 40 fps</p> <p>The VIS camera should have 1392 x 1040-pixel resolution or better, pixel size: 6.45µm x 6.45µm or better, frame rate: max. 40 fps</p>		
7	Computer and Software  Instrument vibration isolation	<p>Latest and fully configured computer with OS and dual monitors should be provided</p> <p>User-friendly optical modeling tool/software</p> <p>Offer tools like line profile, cross section, and an option for post measurement extraction of Delta and Psi spectra for dedicated locations on the microscopic scale</p> <p>Upgrades to software should be free permanently.</p> <p>The system must include a vibration isolation table suitable for the system performance and specifications</p>		
8	Warranty and support & training	<p>Must include one-year warranty.</p> <p>Training on usage of the instrument and application training (hardware and software) must be provided by the OEM trained application engineer for minimum of 3 days</p>		

(Note: It is mandatory for the bidders to provide the compliance statement (comply/not comply) for the Above points with document proof as required). If the compliance statement (comply/Not comply) is not furnished for the evaluation. Bidders will be disqualified.