## Technical Specifications of Cathodoluminescence Detection System

| I | Bidder Eligibility Condition | Comply /Not Comply | Ref. Page No. |
|---|---|---|---|
| 1 | The bidder/OEM should have supplied at least 1 similar item to IITs, NITs, IISERs, CSIR Labs or other Govt. organizations and Industry in the last 5 years, PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims submitted by the bidder and the feedback from the previous customers will be part of technical evaluation. | | |

| S.No | Feature | Requirement | Comply / Not comply | Ref. Page No. |
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| 1 | Mount | Single port of the SEM chamber | | |
| 2 | Spectrometer:<br>a. Resolution<br><br>b. Collection efficiency | Spectral resolution < 1 nm or better at 435 nm with a 300 groove/mm grating or better<br><br>System should collect more than 75 % of emitted photons | | |
| 3 | Collection optics | Collection mirror should be retractable under vacuum (At a minimum retract at least 200 mm)<br><br>Collection mirror should align to the electron optical axis (±20 µm) at more than one SEM accelerating voltage<br><br>Alignment routine should be capable of locating the sample at the focal point (±50 µm) of the collection optic delivering optimized collection efficiency | | |

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| | | The collection optic and optical detection system should always be co-aligned and not require user adjustment<br><br>System should be capable of self-aligning without the need for the sample under investigation to be cathodoluminescent.<br><br>The region in which light is collected efficiently (the CL field of view) should be independent of system spectral resolution | | |
| 4 | PMT detector | Fast-mapping detector capable of detecting CL signal intensity with dwell time/ pixel < 1 µs<br><br>Detector should be sensitive to wavelengths in the range 300 – 800 nm<br><br>Up to 6000 spectra for hyperspectral data set with 256 x 256 (spatial) pixels or better | | |
| 5 | Analysis modes | Unfiltered mapping, Wavelength-filtered mapping, Wavelength spectroscopy and Hyperspectral imaging | | |
| 4 | Specimen tilting | At least ~15° in one tilt axis with collection mirror | | |
| 5 | Time required to change in state of EDS detector | Max. within 5 seconds | | |
| 6 | Image capture system | Capturing SEM and CL images simultaneously with a pixel density up to 8000 x 8000 pixels and aspect ratio up to 1000:1 or better<br><br>Display CL and SEM signals during data acquisition to ensure | | |

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| | | that data collection may always be monitored | | |
| 7 | Software | Data capture and analysis with suitable software and the software can acquire the image capture recipes, storing and recalling all image parameters (pixel density, dwell time) and, spectrometer and detector settings etc. | | |

(Note: It is mandatory for the bidders to provide the compliance statement in tabular column format along with catalogue page number (comply/not comply) for the Above points with document proof as required. Failing which bidders will be technically disqualified)