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

Ref No. (PR No. 1000033758) **(Rfx No. 6100001489)**

Technical specification for upgradation of existing EDS system by adding Automated Feature Analysis to the configuration:

The EDS system installed on our FESEM is to be upgraded by adding the software to facilitate the Automated Feature Analysis as per following specifications. Some example of the feature are: non-metallic inclusions in steel, precipitates in metals and alloys, phases in minerals and ceramics etc. SEM typically recognizes these features based on BSE contrasts.

Data Acquisition Software including following:

1. A high-performance particle/inclusion analysis software for the fast and accurate detection, analysis and classification of particles/inclusions. It should include an easy set-up with rapid and accurate particle detection and classification.
2. It should analyse up to 200,000 particles and 10,000 fields per run
3. It should include a Setup of thresholds for particle detection with real-time feedback on particles and morphological parameters detected. Single and multiple threshold options should be available
4. It should detect particles from electron image or by chemistry from maps acquired from the whole field or triggered by grey level threshold (Feature Phase)
5. Grey level image processing options including median and smooth etc.
6. Binary image processing options including open, close, dilate, erode, hole fill, particle separation etc.
7. Options to acquire X-ray data from each particle, extract X-ray data from a single field X-ray map or extract from a montaged large area map.
8. Options to acquire X-ray data only on particles that meet certain morphological criteria
9. Particle classification based on chemistry, morphology, position, number of counts in EDS spectrum, grey level of feature in BSE image or a combination of the above – positive, negative and arithmetic criteria.

10. Histograms and table for comprehensive data analysis with adjustable bin sizes.
11. Two-dimensional scatter plots
12. Quant Bars to graphically display and interrogate particle composition.
13. Ternary diagrams of particle composition including oxide and sulphide plots
14. Matrix correction should be available
15. Should have a guided workflow for ease of setting up the analysis and creating reports
16. User should be able to turn off the beam automatically after the completion to allow unattended use of the feature analysis software
17. The software should record the morphology and chemical data of each particle and provide and option to save or not to save image of each particle

Data to be reprocesses and reclassified without the need for reacquisition:

- Relocation of a selected particle or field under the microscope beam for further investigation
- Fully automated or manual re-acquisition of high resolution particle images from selected particles, including the ability to individually threshold particle and choose which particles to reacquire in manual mode.

Warranty: - One Year