GTE No. SCTIMST/BMT/GTE/8193-PMD/2023-24/01 dated 11.12.2023

ATOMIC FORCE MICROSCOPE (AFM)

[Ref: Pre-bid Meeting conducted on 20.12.2023, 11.30 am]

Pre-bid Queries & Responses

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#	Tender Ref. & Pre-bid Query/Suggestion	Response
01.	1(a). AFM Scanning configuration: Suggest including AFM Sample scanning configuration in addition to tip scanning configuration.	Accepted. Since several AFM manufacturers have sample scanning configuration, it is recommended to add sample scanning configuration in addition to tip scanning configuration.
02.	1(c). Sample size: Suggest sample thickness 20 mm and more.	Accepted. Typical samples thickness in our application is in the range 1 mm to 20 mm. So this suggestion is considered.
03.	1(g). Anti-vibration table: Suggest Active vibration isolation comes part of AFM system rather than inbuilt.	Accepted. Since most of the commercial AFM systems require a separate active vibration isolation table, we could consider this point.
04.	2(a). Scanner Principle: Suggested to include Piezotube Z scanner in addition to flexural-base decoupled Z scanner. Tip scanning configuration and flexural based decoupled Z scanner cannot be achieved at the same time. Allowing piezo tube scanner would allow more AFM manufacturers in participating in the GTE since some AFM manufacturers use Piezotube scanner technology.	Accepted. The point is considered for encouraging maximum participation of AFM manufacturers in GTE.
05.	6. Quality Certificate: Suggest to mention ISO/CE certification	Not accepted. Since CE mark is not a quality assurance declaration or a quality certification mark, we cannot equate ISO to CE.
06.	8(b). Image Analysis Software: Does separate software for image analysis has to be a third party software?	Usually AFM image acquisition and image analysis software are separate. We mean that the AFM supplier provides both image acquisition and image analysis software developed by the AFM manufacturer, not from a third party.

07.	1(a). AFM Scanning configuration: Suggest including AFM Sample scanning configuration in addition to tip scanning configuration.	Accepted. We shall consider this point since some AFM manufacturers have sample scanning configuration.
08.	1(c). Sample Size: Suggest sample thickness 20 mm and more.	Accepted. Typical samples thickness in our application is in the range 1 mm to 20 mm. Hence, this suggestion is considered.
09.	1(e). Integrated manual sample positioning translation stage size: Suggest to include electronic sample positioning stage	Not accepted. Manual sample translation stage $\geq$ 10 mm $\times$ 10 mm is suited for application. Hence electronic sample position stage is not required for our application.
10.	3(b). Operating wave length of AFM laser: Several AFM manufacturers use near infrared laser for alignment and cantilever tuning. Hence it is suggested to include the wavelength of near infra red in the wave length range of AFM laser beam.	Accepted. We agree to this point and shall modify the spec of AFM laser beam to include the wave length of near infrared laser.
11.	5. AFM Controller: AFM manufacturers use different electronic configurations in order to achieve the performance criteria of the AFM. Hence it is suggested to make the AFM controller specifications general such that more AFM manufacturers can participate in GTE.	Accepted. We agree that AFM controller specifications architecture are manufacturer dependent and are designed to achieve the performance criteria of the AFM. We shall consider this point so that more AFM manufacturers can participate in the bidding process.
12.	5. AFM Controller: Specify the number of lock-in amplifiers, e.g. 4, in the controller that would enable operation of additional modes such as Kelvin probe microscopy, and electrostatic force microscopy.	Accepted. It would be mentioned in the specification that sufficient number of lock-in amplifiers should be present to enable the functioning of different modes of AFM as mentioned in 1 (h) (Modes of operation).
13.	4(b). Direct optical video access by CCD: Suggested to add objective lens together with CCD for capturing optical image of the cantilever as well as that of the sample.	AFM must include suitable top and side view optics and camera for visualising AFM cantilever and sample. The sentence will be modified for clarity.
14.	2(c). Scanner Z-axis range: Suggest to include Z axis range 40 µm or higher for imaging whole cells.	We agree that a large Z scanner range would allow imaging thicker samples such as whole cells and more rough samples. Z scanner range can be modified to $\geq$ 10 µm, which would cover the

		range specified by the bidder as well as cover the Z range of most manufacturers, thereby enabling better participation. Further the specification allows high resolution imaging the topmost topography of thicker samples.
15.	13. Optional Upgrades - Provision of future upgradation: Suggest to include Phase contrast and Differential Interference Contrast microscopy modes in the Digital inverted microscopy since these modes give the best contrast for transparent objects in digital inverted microscopy.	Not accepted. Incorporation of Digital Inverted Microscopy is only for a future upgradation and we do not immediately plan to have this option. However, we require an AFM platform that would be suitable for upgrading with additional accessories such as Digital Inverted Microscopy with atleast single objective, eyepiece and can be operated in phase contrast or differential interference contrast or fluorescence for imaging cells.
16.	1(e). Integrated manual sample positioning translation stage size: Suggest to amend the travel range as ≥10mm x10mm travel in XY	Accepted. Manual sample translation stage ≥ 10 mm × 10 mm would be suitable for our application.
17.	2(a). Scanner Principle: Suggest to include Piezo tube scanner in addition to Flexure based XY scanner and decoupled piezo based Z scanner.	Accepted. We agree to this suggestion and the point may be considered for encouraging maximum participation of AFM manufacturers in GTE.
18.	2(c). Z-axis scanning range: Request to include standard Z-axis scanning range as 10µm to 15 µm.	Accepted. We would amend Z scanner range as ≥ 10 µm, since it would cover the range specified by the AFM manufacturer as well as cover the Z range of most manufacturers, thereby enabling better participation.
19.	5. AFM Controller: AFM System Controller with equivalent or better specifications suitable for AFM to be quoted.	Accepted. AFM controller should have the required specifications necessary for the functioning of different modes of AFM as mentioned in 1 (h) (Modes of operation). Controller specifications would be amended so as to enable the participation of AFM manufacturers having different

		controller architectures for achieving functions mentioned in 1 (h).
20.	13. Provision of future upgradation: Suggested to amend the specification as 'AFM should be capable of IOM integration with no. of objectives, no. of eye pieces, Bright field, phase contrast and fluorescence imaging capability required for future upgradation.'	Not accepted. Incorporation of Digital Inverted Microscopy is only for a future upgradation and we do not immediately plan to have this option. However, we require an AFM platform that would be suitable for upgrading with additional accessories such as Digital Inverted Microscopy with atleast single objective, eyepiece and can be operated in phase contrast or differential interference contrast or fluorescence for imaging cells.
21.	12. Warranty and Support: Clarity sought on warranty of 3 years and AMC & CMC for 7 years.	7 Years AMC and 7 Years CMC post warranty period of 3 years shall be quoted separately. It will be the choice of user to go for AMC or CMC after warranty.
22.	Payment to foreign suppliers: Request to modify the LC Payment terms to 80:20 or 90:10.	Accepted. LC Payment terms modified to 80:20.
23.	Request to reduce EMD amount	Not accepted. EMD fixed as per existing rule provisions.
24.	Request to reduce PBG percentage to 3%	Partially accepted. PBG percentage reduced from 10% to 5%.
25.	Extension of tender due dates	Accepted. Tender due dates will be extended suitably.

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