

**Tender Notification for the procurement of a "In-situ micro-mechanical testing system with EBSD" at IISc, Bangalore**

**(Last Date for submission of tenders: 10<sup>th</sup> February 2017)**

Dear Sir/Madam,

Kindly send your best quotation for the following item on C.I.P. Bangalore basis. Your quotation should clearly indicate the terms of delivery, delivery schedule, E.D., payment terms etc. The tender should be submitted in two separate sealed envelopes - one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 1700 hours 10th February (Friday), 2017.

Please enclose a compliance certificate along with the technical bid.

**Specifications for the product**

<b>Item</b>	<b>Must have requirement</b>	<b>Optional requirement</b>
Testing modes	<ul style="list-style-type: none"> <li>• Tension and compression at all temperatures</li> <li>• 3- and 4-points bend tests at room temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Torsion</li> <li>• 3- and 4-point bend tests at all temperatures</li> </ul>
Tests	<ul style="list-style-type: none"> <li>• Standard displacement rate controlled test, creep, stress relaxation, fatigue and fatigue with hold-time at maximum and minimum load</li> <li>• Single software package for performing all tests</li> </ul>	<ul style="list-style-type: none"> <li>• Constant true strain rate tests</li> <li>• Constant true stress tests</li> <li>• Stress and strain rate jump tests</li> </ul>
Minimum sample size for tension test (l x w x h)	$\leq 200 \mu\text{m} \times 100 \mu\text{m} \times 50 \mu\text{m}$	$\leq 200 \mu\text{m} \times 100 \mu\text{m} \times 10 \mu\text{m}$
Maximum sample size for tension test (l x w x h)	$\geq 25 \text{ mm} \times 10 \text{ mm} \times 4 \text{ mm}$	

<b>Load Specifications</b>		
Maximum load	5 kN	10 kN
Load step	0.1 % of the maximum load	0.01 % of the maximum load
Load resolution	0.1 % of the load cell	0.01 % of the load cell
Additional load cell		500 N
<b>Displacement Specifications</b>		
Maximum displacement rate	$\geq 50 \mu\text{m/s}$	
Minimum displacement rate	$\leq 0.1 \mu\text{m/s}$	
Resolution in displacement rate	$\leq 0.1 \mu\text{m/s}$	
Maximum displacement	$\geq 25 \text{ mm}$	
Resolution in displacement	$\leq 0.1 \mu\text{m}$	
<b>Temperature Specifications</b>		
Maximum Test Temperature	$\geq 500 \text{ }^\circ\text{C}$ (for tension and compression) in SEM level vacuum	
Temperature stability	$\pm 1 \text{ }^\circ\text{C}$	$\pm 0.1 \text{ }^\circ\text{C}$
Temperature steps:	$\leq 0.5 \text{ }^\circ\text{C}$	
Temperature measurement independent of temperature controller	yes	
Minimum time to reach 500 °C from room temperature	$\leq 5 \text{ minutes}$	
Environment required for performing tests at 500 °C	Vacuum (ordinary SEM level vacuum)	Ambient

<b>EBSD</b>		
Stage and attachments for EBSD	Capable of performing EBSD at room temperature as well as high temperatures	
<b>Fatigue Specifications</b>		
Maximum Frequency	$\geq 1\text{Hz}$	
R-Ratio	$\geq \pm 1$	
<b>Data Acquisition Specifications</b>		
Sampling frequency	$\geq 10\text{ Hz (10 samples per second)}$	$\geq 1\text{ kHz}$
Format for data export	Text, Excel, CSV	ASCII
Additional input data channels	Additional channels in main controller / software for recording at least one extra load, temperature and displacement sensor data from sensors other than provided by vendor	
<b>Miscellaneous</b>		
Drive motor	Not a stepper motor	DC or servo-motor
Test platform	In situ as well as ex situ	
Service and labour		Free for 3 years (including the change of load cells if necessary)
One upgrade to a new SEM should be done free of cost.		

### Terms and Conditions

1. Two bid system (separate technical and financial bids) in sealed tenders
2. The technical bid must clearly specify the prescribed technical specifications without including the prices. Vendors who include price information in the technical bids will be automatically disqualified.
3. Technical bids will be opened first. IISc may seek clarifications after opening of technical bids, and may ask them to perform in a short time (1 week) some example experiments with their set up on the sample given by IISc to demonstrate the promised technical

specifications. Vendors may be required to give presentations. There are several items that require information to be provided by the supplier. If information is not provided against any of these items, this will disqualify the supplier. After technical evaluation by a committee, vendors may be asked to re-quote in a specific format to facilitate comparison of prices. IISc also reserves the right to cancel the tender at any time without assigning any reason whatsoever.

4. Price bids of only technically qualified vendors will be considered and the vendors will be informed the day of opening the price bids.
5. The price bids must offer CIF Bangalore prices.
6. Prices to be quoted separately for baseline system and options. Prices will should be quoted in adequate detail with relation to packing details to cover insurance compensation in case of damage to any specific modules
7. Indicate separately price of spares listed above in terms of unit cost. The price of these spares will be included in the price comparison. Any additional spares recommended by the company will be considered for ordering but not included in the comparison. The buyer reserves the right to make the final decision on ordered spares
8. Indicate price for annual maintenance contract.
9. The payment will be by letter of credit: payable 80% on shipping, 20% after satisfactory installation and acceptance.
10. Indicate Delivery period.
11. Order will be placed on lowest bid from technically qualified vendor.

➤ The tender documents can be sent at the following address:

Dr. Satyam Suwas  
Professor  
Department of Materials Engineering  
Indian Institute of Science, Bangalore 560012  
Karnataka (INDIA)