



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

**Technical Specifications for Advanced Dynamic Rotational Rheometer**

Rotational stress/strain controlled ‘Advance Research Grade Rotational and Oscillatory Rheometer’ to carry out rheological studies on soft materials such as gel, wax, suspensions emulsions, pastes, polymeric solutions and polymeric melts. The rheometer should have following specifications:

<b>Rheometer modes</b>	Rotational and Oscillation mode rheometer with the high-resolution optical encoder
<b>Motor Technology</b>	Brushless DC/EC
<b>Maximum Motor Torque</b>	$\geq 200$ mN/m
<b>Bearing</b>	Magnetic/Air bearing
<b>Minimum torque in oscillation</b>	$\leq 0.5$ nNm
<b>Torque Resolution</b>	0.05 nN.m or better
<b>Strain Resolution</b>	0.05 $\mu$ rad or better
<b>Step change in strain rate</b>	5 ms or better
<b>Step change in strain</b>	20 ms or better
<b>Normal/Axial Force range</b>	0.005 to 50N or better
<b>Angular Velocity Range</b>	$1 \times 10^{-6}$ rad/s to 300 rad/s or better
<b>Angular Frequency Range</b>	$1 \times 10^{-7}$ rad/s to 628 rad/s or better
<b>Shear rate range</b>	Up to 5000 $s^{-1}$ or above
<b>Temperature range and Solvent Trap</b>	<ul style="list-style-type: none"> <li>• Smart Swap advance Peltier System for inclusion of temperature-controlled with air/liquid cooling with chiller, for the parallel plate,</li> <li>• cone-plate and interfacial geometry as a single temperature accessory to cover the temperature range of -20°C to 200°C or better with Peltier Plate Draft Shield</li> <li>• Refrigerated Circulator with temperature range -10 to 150 °C and bath capacity 5 litres with temp stability : 0.01 °C , Flow rate 12 lit/min</li> <li>• Solvent trap must be quoted for all the advanced Peltier system geometries – which includes both the parallel plate/ cone-plate.</li> <li>• Split Solvent Trap Cover and Location Ring</li> </ul>
<b>Geometries required for Peltier system</b>	<ul style="list-style-type: none"> <li>• Parallel plate Geometry 25 mm, diameter</li> </ul>

	<ul style="list-style-type: none"> <li>• Cone and plate geometry 25 mm, angle 1 degree</li> <li>• <b>Interfacial geometry (Denuoy ring, DWR)</b></li> </ul>
<b>Interfacial accessories</b>	<ul style="list-style-type: none"> <li>• Interfacial shear rheology of thin layers at liquid-liquid or liquid-gas interfaces for application such as pharmaceuticals, foods, personal care products and coatings</li> <li>• Double Wall Ring (DWR) made of Platinum-iridium for inert and ease of cleaning</li> <li>• To measure the surface viscosities as low as 10-5 Pa.s.m without any correction. Should have at least one interfacial rheology installation in India.</li> </ul>
<b>Other Software requirement:</b>	<ul style="list-style-type: none"> <li>• Minimum 50 built-in preprogramed templates for different material should be incorporated in software.</li> <li>• Software include integrated modelling/curve fitting, rheo-optics adapter module, squeeze flow rheology and extensional rheology modules.</li> <li>• Analysis package for interfacial rheology</li> <li>• Software upgradation should be free of cost as per user requirement (after purchase).</li> </ul>
<b>WARRANTY &amp; AMC SERVICES</b>	The instrument should be quoted with one year warranty.
<b>UTILITIES</b>	Below must be quotes with inclusive with the rheometer <b>Air compressor :</b> <ul style="list-style-type: none"> <li>• HP Compressor with drain valve</li> <li>• Dry Point air dryer with filter unit to separate oil, particle and condensate</li> <li>• All units required for installation</li> </ul>
<b>TRAINING</b>	Free of charge training of students in equipment maintenance by the certified company engineers during the warranty period

**Terms and Conditions:**

1. Technical Evaluation will be done on the basis of technical specifications as per our tender notice.

2. Financial bids will be open only for those, who meets **ALL** the technical specification. **L1 price INCLUSIVE OF all the accessories will be considered.**
3. Please send the name and contact details of the person to whom company had supplied a similar systems. Committee may ask for the feedback.
4. Warranty/Guarantee should be clearly mentioned. The Warranty must start from the date of installation at IITB.
5. Installation, demonstration, and training-sessions at IITB will have to be provided by the manufacturer or the vendor for the quoted system.
6. Validity of quotation should be at least for 180 days.
7. Maximum educational discounts should be applied.
8. The delivery period should be specifically stated.

Submit technical brochure and a point-by-point compliance statement with your quotation.