

## Tender Specifications for

### EPR Spectrometer with X- and Q-Band and CW-ENDOR Operable at variable Temperature for Solid and Liquid Samples

<b>X-Band Microwave unit</b>	
Source	Solid State Gun Diode microwave source for X-Band
Power O/P	Max power O/P of 200 mW
Power Attenuation Range	60dB in 1 dB steps
AFC Stability	10 <sup>-8</sup> or better; AFC lock range 4 MHz
Frequency Counter	Integrated Frequency counter with 1kHz resolution
High Sensitivity Cavity	with Light irradiation window and Compatible with Liquid Nitrogen VT Wave Guide cavity cryostat with unloaded <b>Q &gt; 15000</b> with resonator tuning and matching with auto tuning and auto matching for most probe-heads via iris <b>S:N for weak pitch 1000:1</b> or better

<b>Magnet System</b>	
<b>10"</b> double yoke magnet. Min magnetic Field Strength of 1.3 T at 62 mm air gap; water cooled version; Magnet Power Supply: Solid state power supply suitable to the magnet. Stability class 1 x 10 <sup>-6</sup>	
Hall Probe Range	-1kG to 18 kG
Accuracy	Better than 500mG over full range
Short Term Stability	3 mG
Long Term Stability	5 mG
Setting Resolution center Field	2 mG
Homogeneity	<b>50mG/cm<sup>3</sup></b>
Number of Data points	<b>Minimum of 64K</b>

<b>Spectrometer</b>	
Modulation frequencies	10kHz - 100kHz (Preferably Continuous)
Modulation Amplitude	10G at 100kHz
Detection Mode	I /II Derivative spectra including I/II Harmonic with 0 and 90 degree modulation phase simultaneously
Amplification	Up to 10 <sup>4</sup> or better
ADC	<b>16 Bit</b>
Time Constant settable	1 ms – 5 sec or better
Software	Complete software package for EPR Spectrometer control; spectral acquisition for Field Sweep, Temp and Time variation; processing of data , display, print out; Simulation, g- value calculation; base line correction, addition, subtraction, expansion and smoothening of spectra including 2D and 3D spectral display. All Programs compatible with Microsoft Windows 7 with the suitable PC and printer

Manuals for operation , Maintenance and Service Diagrams in hard/Soft Copy

All instruments and accessories should work in 220V/50 Hz 1 Ph or 440V/50 Hz 3Ph

Installation, and commissioning by trained engineers at site is required

Training at the Site in operation and ,maintenance of the spectrometer

For 5years : Comprehensive warranty and performance guarantee , are preferred

An operator trained in the use of EPR and its Accessories to be deployed at SAIF, IIT Madras by the equipment supplier at no cost to IIT Madras for a period of 5 years from the date of installation are preferred

### Optional Accessories:

Q-Band Microwave Bridge	
Operating Frequency	Minimum 34GHz
Microwave Power	80 mW
Power Attenuation Range	60 dB in 1dB steps
AFC Stability	10 <sup>-6</sup> or better

#### C W-ENDOR System for X- Band consisting of

- ENDOR Cavity for RT/LNT with Q-value of 7000 and operating Frequency of 9.4 GHz
- ENDOR Control Program
- ENDOR Power Supply with O/P power supply of 150 watts

#### Variable Temperature accessory for both X- and Q-Band (All accessories to be included)

Temperature range	RT-100K (using Liquid Nitrogen) RT- 4.3K (using Liquid Helium)
Compatibility	For X- and Q-Band resonators and cryostats

#### Goniometer for Crystal Rotation using X-Band:

Manual/Automated Goniometer for crystal Rotation – quote separately

#### LNT Setup for X-Band measurements only

Large Volume Dewar insert	Quartz Dewar (finger type) 150 mL capacity
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**X-Band:** Quartz EPR sample Tubes; Quartz Aqueous Flat Cell;

**Q-Band:** Quartz Capillary Tubes; Quartz Aqueous Flat Cell

#### Calibration Sample kit :

**For checking g-factor/modulation;**

**Strong pitch and weak pitch sample**

Interface kit for attaching the CCR with Cold Head Assembly of Janis model

Recommended Consumable and Spare parts for routine operation

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