

**Physics Department**  
**Indian Institute of Technology Delhi**  
**Hauz Khas, New Delhi-110016**

Date: 8 Nov 2011

Notice Inviting Quotations

Ref. No. IITD/PHY/PL/2011

Due Date: 10 Dec 2011

Please send your quotations to the undersigned in a sealed cover super scribed with our Ref. No. and due date for Steady state and life time phosphorescence and fluorescence spectrophotometer in separate sealed envelopes marked technical and commercial bids.

You may quote single equipment having 1, 2 and 3 configurations or two separate equipments having 1+2 and 3 configurations. It is essential that all the configurations (1, 2 and 3) should be from the same Principal Company.

S.No.	Name of item with full specifications	Quantity
1.	<p><b>Steady state PL measurements</b></p> <p>Source: Xe lamp (power<math>\geq</math>200 W)</p> <p>Excitation: Range 200-800 nm (continuously tunable)</p> <p>Emission: Range 200-800 nm (continuously tunable)</p> <p>Bandwidth: Excitation and emission in the range 0-30 nm or better (Continuously tunable)</p> <p>Holographic grating: &gt;1200 grooves/mm</p> <p>Resolution: 0.2 nm or better</p> <p>Accuracy: 0.5 nm or better</p> <p>Ports: 3- 4 ports</p> <p>Sample module: Should be compatible with thin films, liquid and powdered samples</p> <p>Signal-to-noise ratio: <math>\geq</math>5000:1</p> <p>Detector : PMT</p> <p>Option: Possibility of coupling external laser source</p>	1

2.	<p><b>Microsecond lifetime measurement</b></p> <p>Lifetime range: Up to 1 millisecond</p> <p>Pulse width: 1 to 3 microseconds</p> <p>Detection repetition rate: 0.1 to 100 Hz</p> <p>Temporal resolution: 1 microsecond</p> <p><b>Software</b></p> <ul style="list-style-type: none"> <li>• Complete software for performing steady-state data acquisition as well as Fluorescence decay and phosphorescence life time data acquisition</li> <li>• Software must be able to be loaded to on as many “off-line” computers as desired</li> <li>• Software must perform 1-to-4 exponential, Global analysis, Anisotropy decay, Stretched exponential</li> <li>• Software must perform Time Resolved Spectra (TRES), Decay associated spectra (DAS) etc.</li> <li>• 3-D data for complex sample and correlation study</li> </ul>	1
3.	<p><b><u>Picosecond Lifetime measurement</u></b></p> <p>Excitation: Pulsed laser diode (wavelengths: 405 nm; and 488 nm) Peak power &gt;40 mW Attenuation filters in front of laser for varying excitation intensity</p> <p>Optical pulse width: &lt;100 ps</p> <p>Laser Repetition rate: 1 MHz, 10 MHz and 20 MHz</p> <p>Accuracy: ±0.5 nm or better</p> <p>Resolution: 0.2 nm or better</p> <p>Detection: Time correlated single photon counting</p> <p>Detection range: 200 to 800 nm</p> <p>Data Acquisition Electronics: Complete data acquisition electronics including CFDs, variable timing delays, TAC (time-to-amplitude converter) with full Range from 2.5 ns to 1 μs.</p>	1

	<p>Polarisers: System should be equipped with excitation emission polarisers (Glan-Thompson type) that are motorised for lifetime and anisotropy measurements</p> <p>Sample Holder: Peltier/Temperature controlled for carrying temperature dependent lifetime measurements</p> <p>Monochromator: Emission monochromator with minimum temporal dispersion. Spectral bandwidth of 0 – 25 nm or higher</p> <p>Detector: PMT with detector response width &lt; 250 ps with detection range of 200 to 800 nm</p> <p>System IRF: &lt; 300 ps</p> <p>Option: and  better</p> <p>Possibility of coupling other laser diodes  LEDs to the existing system; also capability of changing detector to MCP-PMT for  IRF (instrument response function)</p> <p><b>Software</b></p> <ul style="list-style-type: none"> <li>• Complete software for performing steady-state data acquisition as well as Fluorescence decay and phosphorescence life time data acquisition</li> <li>• Software must be able to be loaded to on as many “off-line” computers as desired</li> <li>• Software must perform 1-to-4 exponential, Global analysis, Anisotropy decay (with G-factor correction), Stretched exponential</li> <li>• Software must perform Time Resolved Spectra (TRES), Decay associated spectra (DAS) etc.</li> <li>• 3-D data for complex sample and correlation study</li> </ul> <p><b><u>Optional</u></b></p> <p><b>(i) Liquid Nitrogen Cryostat</b></p> <p>Temperature range: 77-300 K</p> <p>Stability: ±0.1 K</p> <p>Nitrogen reservoir capacity: ≥1.2 liters</p>	
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<b>(ii) Liquid Helium Cryostat</b>		
Temperature range:	10-300 K	
Stability:	±0.1 K	
High quality quartz windows:	4 or 5 windows for optical and PL measurements	
Sample space:	Space sufficient for carrying our analysis for sample size of 2 cm x 2 cm	
Electrical Feed through:	Feed through with 4 electrical low noise contacts	
Sample Change Time:	5-10 min	
Cool down Time:	20-30 min	
Sample holder:	2 cm x 3 cm optical sample with 1.2-2 cm aperture)	
Calibration samples, all necessary adapter and attachments to build both the systems should also be quoted.		

**All the necessary installation and training must be provided by the vendor.**

**Users list:** Vendors should also specify the user list for the said item in India as well as abroad.

**Warranty: (Required)** On-site comprehensive including part replacement specify for 2 years. This should be clearly shown in the technical as well as financial bid. **Vendors should prepare a compliance sheet with technical specification.**

**Terms and conditions covering submission of quotations**

1. **Delivery:** F.O.B Delhi
2. **Terms of payment:** Letter of credit
3. **Validity of quotations:** **Six months**
4. **Correspondence:** No correspondence regarding acceptance/rejection of Quotation will be entertained
5. **Submission of quotations:** **Separate quotations should be submitted for technical and commercial bid in two separate and clearly marked envelopes**
6. **Educational discounts/rebates:** Wherever admissible
7. **Director's right:** Director reserves the right of acceptance or rejection of any or all quotations without assigning reason

Please send the sealed quotations to

Prof. B R Mehta  
Thin film lab  
Physics Department  
IIT, Delhi-110 016