

**Minutes of the Pre-Bid Meeting held on 01.02.2017 at Conference Hall, Department of Chemistry, CUTN in connection with pre-bid queries raised by prospective bidders against our Tender Enquiry No.30/2016-17 for supply and installation of Laboratory Equipment for department of Chemistry**

The following members of the Committee were present:

- (1) Prof. S. Nagarajan, Head, Department of Chemistry .. Chairperson
- (2) Dr. T. Mohan Das, Associate Professor, Department of Chemistry ... Member
- (3) Dr. S.G. Ramkumar, Assistant Professor, Department of Chemistry ... Member
- (4) Dr. Vittal Babu Gudimetla, Assistant Professor, Department of Chemistry ... Member
- (5) Dr. M. Shiva Prasad, Assistant Professor, Department of Chemistry ... Member & Convener

The representatives of following prospective bidders attended the Pre Bid Conference:-

1. Shri Abhilash. S, Senior Sales executive, M/s. Jeol India
2. Dr. Anil Kumar P.G., Regional Sales Manager, M/s. Bruker India Scientific (P) Limited

An email communication received from Dr. Anil Kumar P.G., M/s. Bruker India Scientific (P) Limited with regard to pre-bid query has been addressed by the Committee.

The attendance sheet is enclosed herewith.

**Opening Remarks:**

- (i) Dr. S.G. Ramkumar, Assistant Professor at the beginning welcomed the participating members and after introduction, he briefed all participants about the tender.
- (ii) It was explained that purpose of Pre-Bid Conference is to explain the various important provisions of the bidding documents to the prospective bidders and to clarify the queries that the bidders may have in the subject, bidding documents.

Sl. No	Query/ Clarification Sought	Amendment
1.	Both SB and WB magnets are asked for in the tender where some of our probes are compatible to WB and some are not, we need clear understanding on what the applications are and hence clearly mention if it is WB or SB the customer is interested in	Clarified and amended in the tender
2.	The tender asks for CP/MAS probe upto 40 kHz or so, Bruker do have such a probe. At 400 MHz, this is not an ideal probe due to sensitivity issues. So, please let us know whether it is 4 mm or 2.5 mm probe the customer is interested in.	Clarified and amended in the tender
3.	The tender asks for a 2000 litre liq. N2 tank vertical, can we know the use of it? This is because Bruker/India has never supplied such tank for our NMR usage. As	This is a separate item, and should be dealt separately and not part of NMR spectrometer

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Sl. No	Query/ Clarification Sought	Amendment
	mentioned in your tender that "the bidding can be for specific items or all items in Annexure III", is it possible that we quote for the only items we supply?	
4	A Large number of liquid Nitrogen dewars are asked for, we do not envisage so much quantity for our NMR usage. Hence we will quote for only for the necessary quantity we feel is needed for routine usage of our NMR spectrometer (usually 4 numbers of 50 lts dewars with one manual transfer device).	This is a separate item, and should be dealt separately and not part of NMR spectrometer
5	Long hold time of cryogenes. Liquid Helium hold time with minimum of one year or more. Please specify both LHe and LN2 hold time / refill time / and their hold / refill volumes	Not Amended. 300 days is the requirement for our purposes.
6	JEOL, wide-line probe is under development. However, we brought a new probe of extended VT-HXMAS which can cover temperature ranging from -100Deg to +200Deg. This can be used for static and MAS solid state experiments. Hence we request you to kindly modify the spec as below: Broadband wideline probe / 4mm MAS probe which can cover the nuclei range of 31P, 7Li, 11B, 23Na, 27Al, 13C, 79Br, 207Pb, 29Si, 6Li, 15N 1H, 19F with VT range -100Deg to +200Deg . We request you to kindly keep this spec in optional.	Suitably amended in the probe specification.
7	<b>For broadband probe, mention the range of nuclei covered (minimum required 1H, 13C, 31P, 15N and 19F with 1H decoupling)</b> We request you to kindly amend the probe spec as below so that both the vendors can quote their high sensitive probe. This probe is very much useful for routine solution state NMR studies with highest sensitivity. 5mm multinuclear Broad Band Direct/observe Z-gradient Probe capable of covering almost all nuclei ranges and computer controlled automatic tuning and matching and able to perform all the inverse experiments with high S/N ratio of 1H of 450 or more, 13C in with 180 or more on standard test samples.	Suitably amended.

*G. Thakur*

*Santh*

*D. M. S.*

*H. S. S.*

*M. S. S.*

Sl. No	Query/ Clarification Sought	Amendment
8	5 mm Broadband / HCN Z-gradient Indirect/ Inverse Probe (Triple channel probe with 1H observation) with Manual or Automatic Tuning and Matching (ATM) with higher S/N ratio along with third channel attachment in the spectrometer side.	Suitably amended.
9	One solid state CP-MAS VT-probe with high spinning speed MAS capability (30 - 40 KHz) with all essential accessories. With the capability to cover a nuclei range of 31P, 7Li, 11B, 23Na, 27Al, 13C, 79Br, 207Pb, 29Si, 6Li, 15N, 1H, 19F or a broadband range.	Suitably amended
10	We request you to kindly amend the spec to -100 C to +150 C (Probe temperature Range) or if you are looking for a spectrometer control range , we request you to amend this spec to -175C to +200C.	Suitably amended.
11	Liquid Helium Supply and refilling contact for five years.	Suitably amended
12	We request you to kindly amend this spec to 1 Hr.	Suitably amended

The techno-commercial queries and clarification sought by M/s. Bruker India Scientific (P) Limited are given as under:-

Sl. No	Query/ Clarification Sought	Amendment
1.	We have noted that EMD is 2.5% of the contract and we see that you have taken Rs 3 crores for NMR spectrometer. We also have seen that the EMD to be submitted is Rs 7.5 lakhs, do we need to enclose this in our technical or price bid? We suppose it will be in technical bid, kindly clarify	The EMD to be submitted along with Technical Bid Document.
2.	Also the EMD validity is mentioned as three years, which will not be accepted by our finance as our 10% BG will be active (for the warranty period) in case you place an order on us.	The EMD shall be valid upto to 45 days after the period of tender validity (i.e., 180 days + 45 days)
3.	Delivery in 4 weeks is not possible as this is a high-end instrument which cannot be stocked at our factory. Our Principals start	Supply: Twenty-Four (24) weeks from date of

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Sl. No	Query/ Clarification Sought	Amendment
	the manufacturing only after your PO and L/C is accepted.	<p>signing of copy of Purchase Order by the Bidder.</p> <p>Installation</p> <p>Four (04) weeks after the deadline for supply of equipment.</p>
4.	There is a BG to be given immediately after the order placement. It is for 10% and valid till end of 36 month warranty or so. We cannot have EMD, One BG after order and one BG after installation, which means three guarantees given for same instrument. This will not be acceptable for our finance department. Our Principals will give a 10% PBG after installation. They cannot give a BG after order confirmation since EMD is active.	<p>1. As per tender Clause No.13 bidder has to submit an EMD @ 2.5% on estimated value and which shall be valid for a period of 225 days.</p> <p>2. After issuance of Purchase Order the supplier shall produce the Performance Security equal to 10% of the contract value and shall be valid all along the warranty period and shall extend upto 60 days after the completion of warranty period. The EMD submitted by successful bidder will be returned after submission of Performance Security.</p>
5.	The tender asks for BG for local items also, please let us know if this is necessary as we haven't given BG for local items elsewhere. The reason being that this is a third party item.	Performance Security has to be executed for local items also and shall be valid all along the warranty period and shall extend upto 60 days after the completion of warranty period.
6.	We cannot door deliver the instrument. It will only be upto Chennai airport on CIP basis. This is the directive from our Principals and have followed this directives for the last three decades or more and accepted by all our customers	As per tender clause No.10.2 Price quoted for equipment must include all costs associated with packing, transportation, insurance, all duties and levies, delivery of equipment, loading and unloading on DOOR DELIVERY basis to the university at Neelakudi Campus, Thiruvarur 610 005 including its installation, commissioning, integration and validation. Further, the custom duty as applicable after considering eligible concessions based on DSIR exemption etc will only be paid by the purchaser. The University can provide the copy of the DSIR customs and excise duty exemption certificate upon request

The bidders were informed to ensure that all mandatory documents / certificates / undertakings are enclosed with the bids, as specified in the tender document.

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The bidders were informed that the minutes of the pre-bid conference and amendment of the bidding forms shall be published on the website of Central University of Tamil Nadu. The bidders were also informed that they should also regularly visit the CUTN website for any amendments issued.

In case of any further information/clarification, they were asked to contact over phone, to the Purchase Section at 04366-277359 (or) send email on [purchase@cutn.ac.in](mailto:purchase@cutn.ac.in); Individual visits are not entertained.

The queries related to the technical aspects raised by the suppliers were considered and appropriately incorporated. The revised tender document is enclosed, which shall be replaced as the amended tender specification.

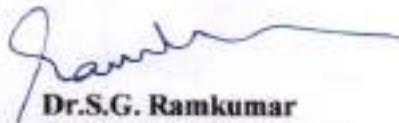
The meeting ended with a vote of thanks to the representatives of the prospective bidders.



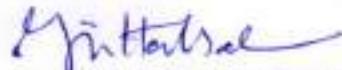
**Prof. S. Nagarajan**  
Head, Department of Chemistry



**Dr. T. Mohan Das**  
Associate Professor,  
Department of Chemistry



**Dr. S.G. Ramkumar**  
Assistant Professor,  
Department of Chemistry



**Dr. Vittal Babu Gudimetla**  
Assistant Professor,  
Department of Chemistry



**Dr. M. Shiva Prasad**  
Assistant Professor,  
Department of Chemistry

## 400 MHz FTNMR spectrometer specification

Quotation is requested for latest version of 400 MHz FTNMR spectrometer for advanced multi-dimensional solution and solid state experiments.

### 1. Magnet:

Standard bore (if you have the options of "Standard bore" and "Wide bore" magnets please specify separately) actively shielded superconducting magnet with  $^1\text{H}$  operation frequency of 400 MHz with following specifications:

- i. Shortest possible radial and axial stray fields. Specify the distance of stray 5 Gauss field from the centre of magnet.
- ii. Specify the overall Magnet dimensions / ceiling height requirements.
- iii. Low drift rate of the magnetic field and any external disturbance suppression of  $\geq 99\%$
- iv. Long hold time of cryogenics. Liquid Helium minimum of 300 days or more. Please specify both LHe and LN2 hold time / refill time / and their hold / refill volumes. (Please quote for the longest hold magnet currently available with compact Dewar design)
- v. All support equipment for cryostat like LHe and LN2 transfer lines, cryogen level indicators (digital preferred), etc.,
- vi. Anti-vibration platform for mounting magnet and specify the lower limit of frequency of vibrations damped.
- vii. Specify number of built-in cryo shims and room temperature shims.
- viii. Pneumatic / Automatic sample load / eject / spin systems for both liquid and solid state probes.

### 2. Console.

Two independent RF Channels capable of upgradation to three channels in future, specify the frequency range of operation, with best frequency and phase resolution, fast switching time for all parameters without any hidden delays. Please specify the configuration and band-width of each channel.

The console should include:

- i. Waveform generators for all channels for pulse shaping.
- ii. Amplitude, phase and composite pulse decoupling generator
- iii. Preamplifiers and filters for noise reduction.
- iv. Amplifier set suitable for solid state probes.
- v. Linear amplifiers for each channel to provide the shortest possible pulse widths. Specify all relevant parameters including power (wattage), frequency range, duty cycle, maximum pulse duration etc.
- vi. Frequency synthesizers for each channel.
- vii. Transmitter controllers for each channel.
- viii. ADC with high dynamic range and sampling rate. Specify the resolution of the ADC (in bits) and the maximum sampling rate.
- ix. Digital quadrature detection facility
- x. Gradient units for performing gradient experiments and gradient shimming. Please provide specifications.

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- xi. Digital field / frequency lock unit ( $^2\text{H}$ ) for high magnetic field stability. Provide relevant specifications.

### 3. Probes:

#### a) Solution Sample Probe

- i. Auto tunable 5 mm multinuclear ( $^1\text{H}$ ,  $^{19}\text{F}$  and  $^{15}\text{N}$  to  $^{31}\text{P}$ ) direct probe with facility for observing  $^{19}\text{F}$  with  $^1\text{H}$  decoupling/ vice versa and variable temperature capability
- ii. Minimum  $-100^\circ\text{C}$  to  $+150^\circ\text{C}$  range with precise monitoring of sample temperature (not gas temperature).
- iii. Probes with gradient shimming capability
- iv. Auto tune / match built in capability.
- v. Capability to do highest solvent suppression with the probe
- vi. Capability to carryout PFG experiments
- vii. Able to do all inverse experiments with  $^1\text{H}$  and  $^{13}\text{C}$
- viii. Specify relevant parameters (Provide probe specifications) such as,
  - a) Best Signal to noise ratio for each nuclei under standard test conditions.
  - b) Best Line width at half height and base
  - c) Best Achievable  $90^\circ$  pulse width, etc.
- ix. Include additional accessories that may be required for the probe.
- x.  $90^\circ$  pulse widths and power for  $^1\text{H}$ ,  $^{13}\text{C}$  and  $^{15}\text{N}$ . Please also specify maximum duration of r.f. irradiation for each nuclei, duty cycle, etc.

#### b) Solid State probe - High Spinning Speed MAS probe upto 15 kHz

- i. Broad band double resonance magic angle spinning probe of 4 mm diameter to achieve a spinning speed of upto 15 kHz and to cover a range of nuclei,  $^{15}\text{N}$ - $^{31}\text{P}$  + proton decoupling (Provide probe specifications) or probe with capability for nuclei  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^7\text{Li}$ ,  $^{11}\text{B}$ ,  $^{23}\text{Na}$ ,  $^{27}\text{Al}$ ,  $^{13}\text{C}$ ,  $^{79}\text{Br}$ ,  $^{207}\text{Pb}$ ,  $^{29}\text{Si}$ ,  $^6\text{Li}$ ,  $^{15}\text{N}$ ,  $^{19}\text{F}$ .
- ii.  $90^\circ$  pulse widths and power for  $^1\text{H}$ ,  $^{13}\text{C}$  and  $^{15}\text{N}$ . Please also specify maximum duration of r.f. irradiation for each nuclei, duty cycle, etc.
- iii. Best resolution and line shape. Please specify line widths achievable
- iv. Signal to noise ratio for each nuclei
- v. Specify temperature range achievable
- vi. Include additional accessories that may be required for the probe.

#### c) Optional third channel with suitable amplifier electronics

(c-1) Solution state probe - Triple resonance pulsed field gradient probe with provision for a broadband nuclei on X channel.

(c-2) Solid state probe - wide-line solids 5 mm double resonance probe (with no spinning and horizontal solenoid coil) to cover a temperature upto  $200^\circ\text{C}$  and above. Please quote wide bore magnet if needed for this probe.

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#### 4. Dual Receiver capability

#### 5. Temperature unit.

- i. Variable temperature controller unit with high stability capable of achieving wide range of temperature (preferred +200 to -200 °C). Specify resolution / accuracy / stability of temperature settings.
- ii. The probe should be able to operate between -100 to +150 °C.
- iii. Accessories required for achieving low temperature, such as LN2 boil off containers / Air or gas coolers, etc.

#### 6. Other Accessories:

- i. Low noise, oil free air compressor attached with moisture condenser and regenerators
- ii. Buffer pressure tank of suitable capacity – specify the capacity
- iii. Standard test samples for multinuclear studies
- iv. Sample spinner / holders for standard NMR tubes
  - a) Low / high temperature – 3 Nos.
- v. Regular upgrades to all softwares during warranty period
- vi. RF testing cables / air flow plastic tubes / connectors
- vii. Vendor should confirm supply of Liquid helium and Nitrogen for installation.
- viii. Liquid Nitrogen containers with all necessary accessories for transfer – One number of suitable capacity to be quoted in Indian rupees.
- ix. State of the art PC workstation with a minimum 16GB ram (upgradable; mention the scalability), 1TB hard disk with duplex laser printer (one colour and one b/w) loaded with suitable OS (Preferably linux based OS) along with necessary software for spectrometer control, acquisition, processing of 1D and 2D NMR data (including HMBC, HMQC, DOSY, DEPT, etc., - mention the included pulse programs) and automatic recording of multiple experiments.
- x. NMR software for analysis, integration and deconvolution of 1D, 2D and higher dimension spectra recorded by the instrument
- xi. High end graphic tools for plotting 1D, 2D and multiple dimension spectra
- xii. Standard sample set for calibration of resolution and sensitivity for all the standard nuclei. Standard samples for temperature calibration.
- xiii. Automatic NMR sample changer with minimum 24 sample positions (including spinners).
- xiv. Comprehensive THREE year warranty from the date of installation including services and spare parts thereof
- xv. Five year contract for refilling LHe.

#### 7. Optional Items;

- i. One extra workstation for off line processing of NMR data
- ii. Extra data processing licences – numbers and cost to be mentioned.
- iii. Suitable UPS with 1 hour back up.

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## 8. Other details

- i. Please mention the shortest possible delivery time and installation of complete system
- ii. On-site training
- iii. Names and address of nearest service centre with in-house service engineer and application specialist.
- iv. List of installations done in southern part of India

## II. Storage Tank

Liquid Nitrogen Storage capacity	:	about 2000 litres
Configuration	:	Vertical
Inner Vessel material	:	Stainless steel
Outer Vessel	:	Carbon Steel

With necessary accessories / provisions to withdraw desired amount of liquid nitrogen. The supplier should install the storage tank for immediate use filled with liquid nitrogen at the site.

## III. Transportation Cryocans fitted with wheels.

Liquid Nitrogen capacity	:	about 50 (8 nos) About 100 (1 Nos)* About 200 Litres (1 nos)*
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\*Configuration mechanism : With self-pressurizing withdraw

With necessary accessories / provisions to withdraw desired amount of liquid nitrogen. All should have a wheel attached to easy transportation.

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