IISc/SSCU/2021

Request for quote (RFQ) from domestic (India-based) manufacturers, Indian OEM or its authorized Indian distributor for a 400 MHz Solid-State NMR spectrometer

Tender Opening Date: 26 August 2021
Date for Pre-Bid Clarifications: 31 August 2021
Date for Posting for Final Revised Tender: 2 September 2021
Date for Final Bid Submission: 13 September 2021

This is an RFQ for procurement of a 400 MHz Solid-State NMR Spectrometer System. The spectrometer will be installed at the Chemical Sciences Division at the Indian Institute of Science, Bangalore. The spectrometer will be combined with microwave source and cooling system to perform dynamic nuclear polarization enhanced MAS-NMR spectroscopy.

The quotation should clearly indicate the terms of delivery, installation, delivery and installation schedule, estimated date for commissioning and validation, and payment terms. **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 5 PM, 13 Sept 2021.**

Note: *The Bidder should belong to either class 1 or class 2 supplier distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in a cover letter*

a) *Class 1 supplier: Goods and services should have local content of equal to or more than 50%.*
b) *Class 2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.*

Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to Class-1 supplier.

The quotations should be on FOR-IISc Bangalore basis in INR only.

The bids should be addressed and sent to:
The Chairman,
Solid State and Structural Chemistry Unit
Indian Institute of Science (IISc)
Bengaluru, India - 560012.
Ph: +91-80-2293-2651

Emails regarding any technical clarifications/queries should be sent to: skj@iisc.ac.in

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Technical Specifications and Requirements

I. Specifications and Requirements for Spectrometer and Probe

I.1. Superconducting Magnet

I.1.1. Operational Field: 9.4 T.
I.1.2. Bore size: wide bore (89 mm) magnet.
I.1.3. Sweep Coil: The field should be sweep-able in the range of ± 7500 ppm for future use in DNP experiments.
I.1.4. Drift rate: The magnetic field should be stable such that the drift rate is <15 ppb/hr
I.1.5. Shim system: wide bore magnet shim system to achieve optimal homogeneity in the field. This should be controlled by software.
I.1.6. Cryogen Consumption and sensors: There should be long helium hold time such that no more that 3 He fills are required in a year. The liquid nitrogen consumption should also be very low. The sensors should indicate/alarm the low levels of the cryogens well advance in time. The system should be upgradable to conned to a He recovery system.
I.1.7. Fringe Field: The magnet should be well shielded with extremely small fringe field.
I.1.8. Magnet stand with anti-vibrational base.

I.2. NMR Console and Electronics

I.2.1. RF channels: The system should have at least 4 RF channels, 4 trigger inputs and 4 output controls. The RF bandwidth should be 5 MHz to 800 MHz or more, and spectral width of 7.5 MHz or more. For shaped RF pulses, there should be a waveform memory of 1GB or more.
I.2.2. Control Unit: A control unit with embedded CPU to control the RF channels in both transmission and receiving mode. There should be full and high precision control on the RF pulse parameters, triggers, and delays with a time resolution of 12.5 ns.
I.2.3. RF amplifiers: one amplifier for high RF for ^{1}H and ^{19}F with peak power of 500 W. Two broadband amplifiers for lower RF channel with peak power 500 W. Both should be controlled by software. The low RF amplifier should cover all the NMR active isotope frequencies (except ^{1}H and ^{19}F that are covered by the high RF amplifier) at 9.4 T.
I.2.4. Ethernet router: Sufficient number of ethernet ports for software control of all the parts of the console including power up and down using software.
I.2.5. Shim control.
I.2.6. Variable Temperature Range: VT control using the software
I.2.7. Pre-amplifier system: Preamps for all the RF channels with low system noise, high peak RF power capability, and should be compatible with solid-state NMR probes. The preamps should be highly linear have RF power detection capabilities and should be usable for both detection and decoupling.
I.2.8. Low noise high RF power filters for frequency ranges matching the probe tuning requirements describe below in I.4.2.
I.2.9. Cabinet: An RF shielded cabinet to house all the electronic equipment.

I.3. MAS Unit

I.3.1. High precision spinning rate counter with error less than ±5Hz
I.3.2. MAS Controller with high stability (<0.1%)
I.3.3. Automatic spinning frequency change using remote control from the software.
I.3.4. Software controlled sample ejection and insert

I.4. MAS-NMR Probe and rotors

I.4.1. A MAS-NMR probe with maximum spinning frequency in range 40-60 kHz and sample volume of 10 ul or more.
I.4.2. The probe should be compatible for both double (H/X) and triple resonance mode of operation (H/X/Y). The tuning range for X-channel should be 76 - 165 MHz for specifically to the isotopes (^{31}P, ^{7}Li, ^{11}B, ^{71}Ga, ^{23}Na, ^{51}V, ^{27}Al, ^{13}C, ^{79}Br, ^{55}Mn, ^{121}Sb, ^{59}Co, ^{113}Cd, ^{195}Pt, ^{207}Pb, ^{29}Si and ^{77}Se) and Y in range 28 - 71 MHz specifically to the isotopes (^{209}Bi, ^{2}H, ^{6}Li, ^{17}O, ^{133}Cs, ^{123}Sb, ^{15}N, ^{35}Cl, ^{33}S and ^{14}N).
I.4.3. The required circuit inserts for changing the probe mode should be provided.
I.4.4. The probe should have VT capabilities with temperature range -50 to 80 ^{0}C.
I.4.5. At least 20 pieces of rotor sets (rotors and end caps) together with 3 sets of packing and opening tool kits should be provided.

I.5. Variable Temperature (VT) Experiments Capabilities

I.5.1. Spectrometer should allow VT experiments in wide temperature range suitable for future DNP experiments (~100K) to high temperature for operando reaction measurements (~670 K), given a probe with required capabilities.
I.5.2. Liquid nitrogen heat exchanger and transfer line attachable to the probes for low temperature MAS measurements that allows 173 K or lower temperatures in suitable probe.
I.5.3. The gas flow and heater temperature should be controlled via software and should be capable of the automatic temperature stabilization.
I.5.4. The software should support liquid nitrogen temperature accessories.
I.5.5. Liquid Nitrogen storage Dewar with at least 25 L capacity.

I.6. NMR workstation

I.6.1. The workstation should be configured for the spectrometer with appropriate graphics, RAM, memory, USB and ethernet ports. The operating system as well as the data acquisition and processing software should be preinstalled. A 24” or 28” monitor screen should be also be included.

I.7. Software for data acquisition and processing

I.7.1. Data acquisition and processing software should be preinstalled in the NMR workstation.
I.7.2. One time training for new users should be provided

I.8. Accessories

I.8.1. Liquid Nitrogen transfer line.
I.8.2. Liquid Helium transfer line.
I.8.3. Required cables and connectors and almost equal number of spare cables and connectors for future uses

I.9. Installation

I.9.1. The quote must include the cost of shipping of all the parts, their installation and cryogens needed for bringing the field up to the required strength and have the spectrometer up and running.
I.9.2. The training and help for setting up initial experiments should be included in the cost.

I.10. Warranty

I.10.1. A 3 year warranty on all parts of the spectrometer.
I.10.2. This should include any repair needed to get the system back up and running, cost of site visit, labour, travel, shipping as well as remote guidance if needed.

II. Terms and conditions

II.1. The electrical system installation shall be carried out by qualified electricians either employed or contracted by the vendor.

II.2. The price quotation should include the cost of installation, validation and training of potential users.

II.3. The system should be provided with at least **3-years of warranty**, on all parts and labour, from the date of installation.

II.4. The vendor must provide routine maintenance of the associated equipment that is part of this tender.

II.5. The vendor should have qualified technical service personnel for the equipment based in India and should assure a response time of less than 48 hours.

II.6. Vendor must provide a user list (with contact details including emails and phone numbers) of at least 5 customers from Indian Institutes/Labs where similar systems have been installed.

II.7. For future planned upgrade to DNP, the vendors should show evidence that the DNP probes, cooling unit, and microwave source are commercially available that are fully compatible with the this 400 MHz solid-state NMR spectrometer.

II.8. The lead-time for the delivery of the equipment should not be more than 6 months from the date of receipt of our purchase order.

II.9. The indenter reserves the right to withhold placement of final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason is reserved.

II.10. Wherever requested data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.

II.11. All guaranteed specifications will have to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the service engineers.

II.12. Printed literature and published papers in support of all compliance to the prescribed specifications may be provided.

II.13. Technical evaluation by the institute may include demonstration to verify functionalities and capabilities of the system quoted. Any discrepancy between the promised specifications and measurements will be deemed as technical non-compliance.

II.14. The Bidder's firm should have existence for a minimum of 3 years. Enclose Company Registration Certificate and balance sheet of last three years.

II.15. The Bidder should belong to either class 1 or class 2 supplier distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter

c) Class 1 supplier: Goods and services should have local content of equal to or more than 50%.

d) Class 2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.

Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to Class-1 supplier.

II.16. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per -Annexure 4.

II.17. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Check List to Be Submitted Along with Technical Bid

Please Attach Documents in the order given below.

S.No.	Section Title	Document Provided (Yes/No).	Document Page Number(s)
1.	Signed Check List for Technical Bid (this page)		
2.	Annexure-1: Details of the Bidder		
3.	Annexure-2:Declaration regarding experience		
4.	Annexure-3: Declaration regarding track record		
5.	Annexure -4: Declaration for acceptance of terms and conditions		
6.	Annexure-5: Technical Compliance Sheet		
7.	Annexure-6: Make and Manufacturer Details		
8.	Masked Price Bid (Note that the pricing information should be masked)		
9.	Technical specifications, Brochures and additional certifications where required		

I hereby declare all of the above requested documents are appended along with the technical bid. I understand that the bid will be considered unresponsive if any of the above requested information is missing. I also understand that any bids with pricing information in the technical bid documents will be considered unresponsive.

(Signature of the Bidder)

Printed Name

Designation, Seal Date:

Check List to Be Submitted Along with Commercial Bid

Please Attach Documents in the order given below.

S.No.	Section Title	Document Provided (Yes/No).	Document Page Number(s)
1.	Signed Check List for Commercial Bid (this page)		
2.	Commercial Bid		
3.	Costing Sheet for AMC for 2 years beyond the mandatory 3-Year warranty Period		

I hereby declare all of the above requested documents are appended along with the commercial bid. I understand that the bid will be considered unresponsive if any of the above requested information is missing.

(Signature of the Bidder)

Printed Name

Designation, Seal Date:

Annexure-1: Details of the Bidder

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Details of the Bidder

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name
Designation, Seal Date:

Annexure-2: Declaration regarding experience

To,
The Chairman,
Solid State and Structural Chemistry Unit,
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: ……..
Dated: ……..

Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has …… years of experience in supplying and installing clean room infrastructure for semiconductor fabrication.

(Signature of the Bidder)
Printed Name
Designation, Seal Date:

Annexure-3: Declaration regarding track record

To,
The Chairman,
Solid State and Structural Chemistry Unit,
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: ……..
Dated: ……..

Sir,
I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred / blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I'm competent officer in my company / firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long

(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully
(Signature of the Bidder)

Name
Designation, Seal

Date:

Annexure – 4: Declaration for acceptance of terms and conditions

To,
The Chairman,
Solid State and Structural Chemistry Unit,
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: ……..
Dated: ……..

Sir,

I've carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I'm an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)
Name
Designation, Seal Date: