



INSTITUTE OF NANO SCIENCE AND TECHNOLOGY, MOHALI

(An autonomous Research Institute of Department of Science and Technology,
Government of India)

Habitat Centre, Sec-64, Phase X, Mohali – 160062, PUNJAB

Phone No: 0172 – 2210073/74/75, Fax No: 0172 – 2210074

Website: www.inst.ac.in

Ref No. INST/12(314)/2017-Pur

Date: 18/04/2018

Reference to the presentation given by the bidders attended pre-bid meeting held on 03rd April 2018 at 1100Hrs in the INST Board Room at its interim facility at Habitat Centre, Phase 10, Sector 64, SAS Nagar, Mohali for purchase of equipment: **400MHZ NUCLEAR MAGNETIC RESONANCE SPECTROMETER WITH ACCESSORIES** and after discussion with pre-bid committee following technical specification of the tender has been modified. All bidders are requested to read the below modified specs before participating in the tender.

| Old specifications | New specifications after pre-bid meeting |
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| <p>Spectrometer Console:</p> <ul style="list-style-type: none"> Advanced feature based two broadband frequency generation independent RF channels (full frequency range generation upto 400 MHz) with highest frequency and phase resolution; fast switching time for all parameters, without any hidden delays along with its importance in the quality of the spectra. | <p>Spectrometer Console:</p> <ul style="list-style-type: none"> Advanced feature based three channel broadband frequency generation independent RF channels (full frequency range generation upto 400 MHz) with best phase resolution; fast switching time for all parameters, without any hidden delays along with its importance in the quality of the spectra. |
| <ul style="list-style-type: none"> 2 Channel Amplifier System: Two high performance linear amplifier for observation or decoupling of 1 H or 19 F, with 100 W pulse power minimum and 300 W pulse power minimum in the range of 31 P to 15N All relevant parameters including power, frequency range, duty cycle, maximum pulse duration etc. have to be explicitly specified. | <ul style="list-style-type: none"> 3 Channel Amplifier System: Three high performance linear amplifier for observation or decoupling of 1H or 19F, with 100 W pulse power minimum and 300 W pulse power minimum in the range of 31P to 15N. All relevant parameters including power, frequency range, duty cycle, maximum pulse duration etc. have to be explicitly specified. |
| <ul style="list-style-type: none"> Acquisition system with a control of up to a minimum of two RF channels. Can be expandable to third channel. | <ul style="list-style-type: none"> An acquisition system with a control of up to a minimum of three RF channels should be quoted as an optional item. |
| <ul style="list-style-type: none"> Simultaneous acquisition on multiple channels. | <ul style="list-style-type: none"> Simultaneous (parallel) acquisition capability should be available. |
| <p>Gradients:</p> <ul style="list-style-type: none"> Gradient system for Z shielded gradient with a gradient strength of minimum of 50 G/cm with 10A for gradient NMR experiments in solution. Pulse field gradients (PFG) of any desired shape. Gradient shimming capabilities, for diffusion based experiment. | <p>Gradients:</p> <ul style="list-style-type: none"> Gradient system for Z shielded gradient with a gradient strength of minimum of 30 G/cm with 10A for gradient NMR experiments in solution. Pulse field gradients (PFG) of any desired shape. Gradient shimming capabilities, for diffusion based experiment. |
| <p>Probes:</p> <ul style="list-style-type: none"> Liquids: <ul style="list-style-type: none"> 5 mm multinuclear broadband observe probehead with Z shielded gradient, capable of performing 19F NMR experiment. Broadband observe with | <p>Probes:</p> <ul style="list-style-type: none"> Liquids: <ul style="list-style-type: none"> 5 mm multinuclear broadband observe probehead with Z shielded gradient, capable of performing 19F NMR experiment. It should be capable of decoupling both 1H and 19F. It should |



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| Fluorine that is capable of decoupling both 1 H and 19 F. | include 1H, 11B, 13C, 15N, 19F and 31P. Also specify the other possible nuclei. Signal-to-noise ratio should be more than 500 for 1H (the experimental conditions should be specified). |
| <ul style="list-style-type: none"> Two channel Broad band Probe with Liquid N2 cooling based RF coil for getting high sensitivity of 1H and X nuclei with all required connecting accessories such as cryo platform etc | <ul style="list-style-type: none"> Two channel broadband probe with liquid N2 cooling based RF coil for getting high sensitivity of 1H and X nuclei with all required connecting accessories such as cryo platform etc. Specify the possible X nuclei or the frequency range for the X nuclei |
| <ul style="list-style-type: none"> Triple channel inverse probe (HXY) with complete 3rd channel accessories. Amplifier should be 500W and above for 3rd channel. | <ul style="list-style-type: none"> A triple channel inverse probe (HXY) with complete 3rd channel accessories should be quoted as optional. X and Y should be C and N. Also specify the frequency range of any other possible X and Y nuclei. Amplifier should be 300W or above for the 3rd channel. |
| <ul style="list-style-type: none"> Automatic tuning and matching (ATM) | <ul style="list-style-type: none"> Automatic tuning and matching (ATM) unit |
| <ul style="list-style-type: none"> X,Y (broad band) detection (15N-31P) | Removed |
| <p>– Solids:</p> <ul style="list-style-type: none"> Solid State 2 channel CPMAS 3.2 mm Probe (HX: 1H-19F/15N-31P) Solid state MAS accessories: MAS pneumatic unit, MAS rotor transfer system and MAS heat exchanger for low temperature experiments. Solid state MAS 3.2 mm rotors (20 nos.) and kit Transfer device for sample insert from top of the magnet like liquid state without taking out probe Detail for solid state up-gradation using with existing console having minimum 100W for (1H) and 500W for (X and Y) amplifiers. Same should be used for liquid samples. Standard test samples for probes in solids. | <p>– Solids:</p> <ul style="list-style-type: none"> Solid state 2 channel CPMAS 3.2 mm Probe (HX: X channel should be broadband tuneable from 15N to 31P) with zirconia made rotors (3.2 mm) with caps. The high frequency side of the probe should be capable of 1H high power decoupling. External filters for 1H needed should be specified. Solid state MAS accessories: MAS pneumatic unit, MAS rotor transfer system and MAS heat exchanger for low temperature experiments. The pneumatic control unit is required for operation of rotor with automatic insertion and ejection along with sample spinning regulation. Solid state MAS 3.2 mm rotors (20 nos.) and kit (please mention the effective volume) Transfer device for sample insert from top of the magnet like liquid state without taking out probe Detail for solid state up-gradation using with existing console having minimum 100W for (1H) and 300W for (X and Y) |



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| | <p>amplifiers. Same should be used for liquid samples.</p> <ul style="list-style-type: none"> • Standard test samples for probes in solids. • Fully automated pneumatic unit for high resolution MAS spectroscopy having the followings: <ul style="list-style-type: none"> a) Spinning should be controlled through both manual/automation option b) Accurate spinning rate (up to 15 KHz or better) stabilization c) Automated sample (rotor) ejection and insertion d) Status indicator e) Interface for remote control of automated operation f) Keyboard for manual local operation g) Air cables etc. |
| <p>Accessories:</p> <ul style="list-style-type: none"> – 2 containers (IBPmake) of 100 litres capacity and 4 containers (IBPmake) of 50 litres capacity along with liquid Nitrogen transfer line required for regular filling of liquid Nitrogen in the cryomagnet – For routine operation at RT, one additional ceramic spinner for VT (Variable Temperature) | <p>Accessories:</p> <ul style="list-style-type: none"> – Stainless steel, self-pressurised, transportable liquid nitrogen dewar (200-250 L and 50 L) with necessary accessories, wheels and safety devices: 3 nos. – Liquid nitrogen dewar (50 L) along with necessary accessories: 3 nos. – Liquid nitrogen transfer line with accessories required for regular filling of liquid nitrogen in the cryomagnet. – Ceramic spinner for VT (variable temperature): 2 nos. |
| <ul style="list-style-type: none"> • Liquid Helium for installation and subsequent maintenance for 5 years | <ul style="list-style-type: none"> • Liquid helium and liquid nitrogen for installation should be arranged at vendor's expense. • The liquid helium for the installation should be provided by the vendor at their expense. In case of magnet-quench during the installation or at subsequent times due to any technical reason or failure, the supply (including transport) of the liquid Helium till the magnet is restored to normalcy is the responsibility of the vendor and the entire cost for cryogenics, recharging or replacing the magnet should be borne by the vendor at no additional cost to INST. • The vendor should also arrange for liquid helium (including transport) for the |



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| | <p style="text-align: center;">maintenance of the instrument for 5 years at their expense.</p> |
| <ul style="list-style-type: none"> • Three years complete comprehensive warranty with spares and consumables included from the date of installation. Third party/ local items supplied along with the instrument should have same warranty period like the main instrument. • Annual Maintenance Contract (AMC) Apart from warranty, AMC amount should be quoted for additional 2 years after the warranty period. | <ul style="list-style-type: none"> • Three years complete comprehensive warranty with spares and consumables included from the date of installation. Third party/ local items supplied along with the instrument should have same warranty period like the main instrument. • Annual Maintenance Contract (AMC) apart from warranty, AMC amount should be quoted for additional 2 years after the warranty period. |
| Additional notes added: | <p>Notes</p> <ul style="list-style-type: none"> • Vendor should quote price for each component separately. • The quantity of accessories can be increased or decreased. |

Also, please be noted that the last date of submission of bids would be **15/05/2018 till 2.00PM**. Other specifications and Terms and conditions of the tender are remain unchanged.

Sd/
C.F.A.O