Pt. Ravishankar Shukla University, Raipur 492010 (C.G.)

Pt. Ravishankar Shukla University, Raipur 492010, (C.G.)
(SoS in Physics & Astrophysics)

Tender Notice

No. 231 **Date** 19/07/ **2017**

Sealed tenders are invited from reputed firms/manufacturers/authorized dealers for **Planetary ball mill, AC / DC current source, Electrometer, Nano-voltmeter, Digital Storage Oscilloscope, Digital Multimeter, Galvanostat, Lock-in Amplifier**. Details of the tender and specification of equipments are available in the university website **www.prsu.ac.in**. Tender should accompany two separate DDs for Document Cost Rs 500 /- and EMD @ 3% of the quoted amount.

Last Date of receipt of tender: 05/ 08 /2017, 5 PM; Opening of Technical Bids: 10/ 08 /2017, 12:00 Noon; Opening of Financial Bids (Technically qualified tenders only): 10/ 08 /2017, 3:00 PM

Registrar

Pt. Ravishankar Shukla University, Raipur 492010 (C.G.)

(SoS in Physics & Astrophysics)

Tender Notice

No. ---------- 221 ---------- Date 13 / 07 / 2017

Sealed tender are invited by Registered Post, Speed Post/Courier from reputed registered firms/manufacturers/authorized dealers for the supply of **Planetary ball mill**, **AC / DC current source, Electrometer, Nano-voltmeter, Digital Storage Oscilloscope, Digital Multimeter, Galvanostat, Lock-in Amplifier** as detailed in Annexure-1, under Advance Center for Nano Science and Nano Technology to SoS in Physics & Astrophysics, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh.

The detailed tender form, can be downloaded from university website www.prsu.ac.in completed tenders should be submitted along with tender cost of Rs.500/- and EMD @ 3% of the quoted amount for each item by way of two separated Demand Drafts in favour of the Registrar, Pt. Ravishankar Shukla University, Raipur-492010 payable at State Bank of India, RSU branch. The mode of procurement unless otherwise specifically stated shall follow GFR norms. Last date and time for the receipt of completed tender shall be 05 / 08 /2017.

Date and Time of opening of Technical Bids: 12:00 PM 10 / 08 /2017.

Technically qualified tenders alone will be considered for financial bid.

Date and time of opening of the Financial Bid shall be on the same day after three hours of opening of Technical Bids 10 /08 /2017.

Registrar

General Terms And Conditions

1. The tender should be submitted in prescribed form downloaded from the university website www.prsu.ac.in. The cost of the tender forms will not be refunded in any circumstance.
2. The tenders for equipments mentioned above should be submitted in the form of two bids.
    a. Technical bid
    b. Financial bid

    The interested agencies/firms are advised to submit two separate sealed envelopes superscripted "Technical Bid" and "Financial Bid". Both sealed envelopes should be kept in a third sealed envelope superscripted "Tender No.....TENDER FOR SUPPLY/INSTALLATION OF.....(ENTER NAME OF EQUIPMENT with serial number)",last date of submission, dates of opening of Technical Bid and Financial Bid as indicated above and should be addressed to the Registrar, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh.
3. Envelope-I (Technical Bid) The vendor must submit the following documents in Envelope
    a. Detailed technical specifications and literature/manuals of the goods/services to be supplied.
    b. Technical compliance statement with deviation, if any.
    c. Authorized partner/dealer/distributor certificate from the original manufacturer.
    d. Documentary proof in support of PAN, VAT/TIN No. and Service Tax No.
4. Envelope-II (Financial Bid) The vendor must submit the Price Bid information mentioning all taxes/duties, For University campus, Raipur in the prescribed proforma Annexure-II. The price should be quoted in words and in figures, without any errors or alterations.
5. Each tender should be accompanied by two separate demand draft
    a. Tender Document Cost
    b. EMD @ 3% of the Quoted amount

    Drawn in the favour of Registrar, Pt. Ravishankar Shukla University, Raipur, payable at State Bank of India, RSU branch.
6. Late and Incomplete tenders and tenders without EMD, tender fee will not be accepted.
7. Firms which are exempted from the payment of EMD should furnish attested copy of the currently valid certificate to that effect issued by the competent authority.
8. Firm should submit minimum three supply references supplied to other Universities/ Institutes/ Govt.Organigation/R&D Labs. Should provide supplied equipment details/ Name of the Organization, contact person name and mailed and contact numbers.
9. Firms having local sales and service support with Trained service engineers to offer both emergency & warranty service support within short notice time.
10. All items should have original Test Certificate & warranty certificates with clear mention of item Serial No., Model No., Year of manufacturing etc. from original manufacturing company.
11. You are requested to confirm that in the event of firm is selected for placement of order, your firm will provide warranty from OEM (Original Equipment Manufacturer) of all components/ sub-systems and certificate of materials from supplier that will be used in the equipment.
12. The cost of the equipment should be inclusive of all taxes and statutory levis, labour/installation charges, packing, insurance, freight, etc. should be mentioned separately. For imported goods price to be quoted CIP Nagpur and in case of local firms they should quote FOR Pt. Ravishankar Shukla University, Raipur. Unit price of each product and accessories should be quoted separately. Maximum educational discount for University as could be offered should also be mentioned.
13. The warranty period for the equipment should be for a minimum period of **Two years** from the date of installation.
14. The exact specification, details of make, model, name of manufacturer, warranty details etc. of the item must be clearly specified. Original broachers with detailed technical literature and illustrations of the units quoted are to be attached with the offer. Details of trainings offered, warranty, maintenance service contract offered after expiry of normal warranty, spare parts availability and after-sales-service facilities available should be indicated. Offers without these are liable to be rejected.

15. For those bidders submitting tenders for more than one instrument, must submit Technical Bid and Financial Bid separately for each instrument and must be placed in individual sealed envelopes and these envelopes must be placed inside a bigger envelope. Only one model can be quoted in a tender.
16. The quoted rate should be valid for a period of 90 days.
17. The article to be delivered & installed within 30 days from the issue of P.O.
18. Successful bidder on confirmation of the tender will have to furnish a performance security of 10 % of the total cost of the equipment and execute an agreement in Chhattisgarh Stamp Paper worth Rs. 100/-
19. Any delay in supplying the article from the stipulate date of delivery, will attract LD, Liquidated Damage will be applicable at the rate of 0.5% per week and limited to 10% maximum. The authority reserves the right to cancel the purchase order when LD accumulates to 10%.
20. 100% payment will be made after supply and installation of ordered quantity of article at our end in good condition. No advanced payment request will be entertained.
21. CST/VAT will be paid extra, if applicable provided it is made clear in the quotation.
22. Unsealed quotation will be rejected and quotation must be reach on or before the due date through Speed Post/Registered Post/Courier only.
23. University reserves the right to accept or reject any quotation without assigning any reason thereof.
24. All disputes will be subject to Raipur jurisdiction.

HOD

Annexure-II

Ref No.
.....
.....

Name of Firm-.....
Address-.....
.....
.....

Rate of Equipment

Item Number	Description of article	Quantity	Unit Prize	Tax if any	Total Prize

I.....declare that the rates will be valid for 90 days from the closing date of the tender. We hereby agree to the terms and conditions of the tender and will abide by the same.

Seal and Signature of Tenderer

List of Equipments as Sectioned by the DST and Appeared in the Advertisement to be installed at S.oS. in Physics & Astrophysics, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh.

S.No.	Name of the Equipment	Specification	Cost of Equipment & Accessories (Unit Cost Only)
1.	**Planetary ball mill**	The Planetary ball mill should be capable of grinding (or Pulverizing, mixing, homogenizing, colloidal milling, mechanical alloying) Soft, hard, medium-hard, brittle, fibrous, tough and moist materials in vertical axis. 1. Grinding station should be of single stage with two Stacking bowls facility. 2. Speed ratio The speed ratio should be in the range of 1: -2. 3. Grinding environment must have the capability of operating in both dry and wet Conditions with inert gas environment too. 4. Feed Size should not exceed 10 mm. 5. Final fineness should be less than 1 μm for dry grinding & less than 0.1 μm for colloidal grinding. 6. Sample quantity range should be 10 ml minimum and 220 ml maximum. 7. Effective diameter of main disk should be in the range of > 135 mm. 8. Maximum Rotational Speed of Main disk should not be lesser than 650 rpm. 9. Centrifugal force should be in the range of (>30) x acceleration of gravity. 10. Motor Drive and Power Should be a 3-phase asynchronous motor with frequency converter and the power should 1200 W. 11. **Grinding jar made of Zirconium Oxide** Material with composition of ZrO2 94,500 % Y2O3 05,200 % SIO2 / MgO / CaO / Fe2O3 / Na2O / K2O <00,300 % with 125 ml volume -1 number and the grinding balls of Tungsten carbide material 10 mm- 30 no's , 3 mm- 200 no's. **Optionally 125ml Tungsten Carbide jar -1 number with 10 mm Tungsten Carbide ball – 30 numbers and 3 mm-200 nos** 12. Programmable microprocessor controller should have the facility of programming with programmable interval, Pause time and reverse direction (00:00:01 sec to 99:59:59 hr: min: sec). 13. Electrical Supply Should be single Phase, 230 V, 50- 60 Hz with power consumption not Exceeding 1250 W 14. Net weight should not exceed 90 Kg. 15. Salient Features: planetary ball mill should have the following Salient features: Additional Safety Lock. □ Use counter weight and imbalance sensor to maintain perfect stability on lab bench for unsupervised operation. □ Gentle grinding in centrifugal mode.	

		□ Power failure backup that ensures storage of remaining grinding time. □ Electricity saving mode. □ Contamination free grinding. • powerful and quick grinding down to nano range • perfect stability on lab bench with FFCS technology • innovative counter weight and imbalance sensor for unsupervised operation • gentle grinding in centrifugal mode • comfortable parameter setting via display and ergonomic 1-button operation • automatic grinding chamber ventilation • 10 SOPs can be stored • programmable starting time	
2.	**Constant Current Electrometer**	i) System should be capable of current measurement upto 20 mA. ii) System should have minimum current range of 20 pA. iii) Current resolution: 100 aA. iv) Input impedance : >200TΩ v) Voltage measurement capability: 200V. vi) Voltage resolution:10 µV. vii) Resistance measurement up to : 1Ω to 10^{18} Ω. viii) System should be able to measure resistance and resistivity. ix) Charge measurement capability: 2 nC -2µC. x) System should have built in voltage source up to 1000V. xi) System should have alternating polarity method for high resistance measurement. xii) Input bias current should be < 5 fA or better. xiii) System should able have GPIB, RS 232 communication. xiv) System with single port for V, I, R, C measurement will be preferred. xv) Software should provide with system. xvi) System should have temperature and humidity measurement option xvii) System should have option for 10 channel MUX card facility to log the data from 10 channels.	
3.	**Nano-voltmeter**	i) System should have capability of working together with external current source with alternating current pulses ii) 7½ Digits Display Resolution iii) 1nV @ 10 mV range Sensitivity iv) Noise @ 0.1 sec response (lowest range) ~50 nV p-p v) Noise @ 1 sec response ~13 nV p-p vi) Accuracy @1 mV/ 90 day ~40 ppm + 40 nV vii) Accuracy @10 V/24 hr ~2 ppm + 10 µV viii) Speed @ rated accuracy ~ 0.5 sec/rdg ix) Dual channels (Maximum range Ch1 100V and Ch2 10 V x) Should be compatible with an external current source to perform Resistance and Low voltage measurements using current reversal techniques xi) Input Resistance should be >10 GOHM (~ 10 MOHM for 100 V range). xii) Ratio mode should be available.	

		xiii) Temperature (T/C) mode should be available xiv) Line Synchronization 50 / 60 HZ xv) RS232, GPIB (IEEE488) Interfaces supported and Support for SCPI commands. xvi) 1024 readings of Measurement Memory xvii) Math Functions like Rel, Min/Max/Std Dev, and Peak-to-peak of stored reading, Limit test, % and mX + b with user defined units displayed.	
4.	**Digital Storage Oscilloscope**	**i) No. of Channels:** a. Analog Channels: 02 b. RF Channel: 01 c. Digital Channels: 16 (optional) d. Arbitrary Function Generator: 50 MHz (optional) **ii) Analog Characteristics:** a) Analog Bandwidth: 200 MHz (option for Bandwidth upgrade up to 1GHz should be available) b) Analog Waveform Capture Rate: > 235,000 Waveforms/Sec c) Maximum Record Length: 10M Points on all channels d) Analog Channel Sample Rate: 2.5 GS/s on all channels e) Horizontal System Time base Range: 1 ns/div to 1000 s/div f) Vertical Sensitivity: 1 MΩ -1 mV/div to 10 V/div 50 -1 mV/div to 1 V/div **iii) Digital Channels Characteristics (optional): 16** a) Maximum Sample Rate: 500 MS/s (2 ns resolution) b) Maximum Record Length: 10M Points on all channels c) Maximum Sample Rate (MagniVu): 8.25 GS/s (121.2 ps resolution) d) Minimum Detectable Pulse Width: 2 ns e) Max Input Peak Digital Channel Voltage: -20 V to +30V f) Thresholds selection: TTL, CMOS, ECL, PECL, User Defined g) Serial Protocol Triggering and Analysis: Should be able to do I2C, SPI, CAN, LIN, RS232, RS485, UART, USB, FlexRay, MIL- STD-1553 Serial Bus Decodes and Bus display with Event Table **iv) Arbitrary Function Generator (optional)** a) Frequency range: 0.1 Hz to 50 MHz b) No. of Channels: 01 c) Waveforms: Sine, Square, Pulse, Ramp/Triangle, DC, Noise, Sin(x)/x(Sinc), Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine, Cardiac, and Arbitary. **v) Digital Voltmeter (DVM) and Frequency Counter** a) Source Channel: Channel 1 and Channel 2 b) Measurement types: AC RMS, DC, AC+DC RMS (Volts or amps), Frequency c) Resolution: Frequency : 5 digits **vi) RF Characteristics** a) Frequency range: 9 KHz to 200 MHz (Option to upgrade Bandwidth up to 3GHz should be available) b) Span Range: 9 KHz to 100 MHz c) Resolution Bandwidth: 20Hz to 150 MHz d) Reference Level: 130 dBm to +20 dBm e) Vertical Scale Range: 1 dB/div to 20 dB/div f) DANL: 9 kHz - 50 MHz < -109 dBm/Hz 50 kHz – 5 MHz < - 126dBm/Hz	

		5 MHz - 2 GHz < -138 dBm/Hz 2 GHz – 3 GHz < -128 dBm/Hz g) Frequency Domain Trace Types: Normal, Average, Max Hold, Min Hold h) Spectrogram: Should have provision to see the history of the Spectrums by moving the time marker in spectrogram. i) Markers: Automatic at least 10 marker peaks identified based on user-adjustable threshold and excursion values. Manual Markers Two manual markers indicating frequency, amplitude, noise density, and phase noise Marker Readouts Absolute or Delta j) I/O Ports: USB, LAN, Video out port (DB-15 female connector) **vii) Standard Accessories:** Power Cord, 200 MHz, 3.9pF passive Voltage probes (2 Nos.), N-to-BNC- adapter, Operating Manual, PC Software, Accessory bag.	
5.	**Multimeter**	i) Measurement Functions: Voltage (AC and DC), current (Ac, DC), resistance, frequency temperature and capacitance ii) System should have V/I digitizer with 1Ms/ sec sampling rate iii) Resolution: 7 ½ Digits iv) Voltage Range: 100 mV to 1000V v) Voltage Resolution: 10 nV vi) Voltage accuracy for 1V @ 90 days: 9 ppm of reading +2 ppm of range vii) Resistance: 1 – 1 GΩ viii) Resistance Resolution: 100 nΩ ix) Current Range: 10 µA- 10A x) Current Resolution: 1 pA xi) Capacitance Range: 1 nF- 1000 µF xii) Frequency/Period: 3Hz to 500KHz / 333ms to 2 us (Reciprocal counting technique) xiii) Capacitance accuracy at 1 nF range: 1% xiv) Temperature Measurement: Direct Thermocouple, RTD, and NTC thermistor temperature measurements xv) Interface: USB and GPIB, LAN LXI xvi) Memory: 11 million in standard mode and 25 Million in compact mode xvii) Display: 5' high resolution touch screen display xviii) Triggering Options: Level, edge and window triggering xix) Direct display of table and/or graph on screen xx) Suitable software should be provided to capture the data and in table format for post analysis xxi) System should be have expansion interface to increase number of channels	
6.	**Galvanostat**	i) Voltage source and measure ranges: 200 mV-100 V ii) Voltage Resolution: Measure: 100 nV, Source:5 µV iii) Current source and measure range: 1 µA -7A iv) Current Resolution: Measure:10 pA,Source:50 pA v) Voltage Accuracy: 0.012% vi) Current Accuracy: 0.025% vii) Sweep Types: Linear, Log, Dual Linear, Dual Log, Custom, Source –Memory viii) Internal Buffer: 250,000 point readings buffer ix) Programming Interface Support: GPIB, USB, Ethernet (LXI),TSP. x) Expansion interface for multichannel operation: TSP-Link	

		expansion interfces for trigger and comminucate with each other xi) Signal supported connectors: a) Front Panel: Banana Jacks , b) Rear Panel: Triaxial (3-lug) xii) Measurement display resolution: 6.5 digit measure resolution xiii) Measurement Mode: Voltage ,Current, Resistance, Power xiv) Display and control: 5 ½ Digits Touch Screen display, Icon based control to set up measurement, source and graph display xv) Digital I/O interface: 9-pin female D connector ,6 I/O user defined for digital I/O or triggering xvi) Accessories: Test leads, USB cable, ethernet/tsp cable, interlock adapter, power cord, quick start guide, CD user manual, etc. xvii) Cyclic Voltammetry application Software: Instrument must be able to support cyclic voltammetry script to perform CV analysis.	
7.	**Lock-in Amplifier**	**i) Measured Signal System:** a. Input mode: single and differential b. Voltage sensitivity: 2 nV/F.S. to 1 V/ F. S. **c.** Gain accuracy: maximum ± 2% d. Input impedance: 10MΩ ± 2% e. Non destructive input voltage: for AC coupling : AC 10Vrms, DC ±50V, For DC coupling: ±14V f. Frequency range: 1mHz to 100kHz (DC coupling), 0.5Hz to 100kHz (AC coupling) g. Harmonic distortion: -90 db(typ.), (1kHz, 1V range **ii) Phase sensitive detector section** a. Dynamic reserve: 100 dB or greater b. Time constant: 10μs to 30ks c. Synchronous filter: On/Off d. Phase noise: 0.001°rms (typ.) (1kHz) Sine wave reference signal, time constant 100ms, attenuation slope 18 dB/oct or more : 0.003°rms (typ.) (100kHz) Sine wave reference signal, time constant 100ms, attenuation slope 12 dB/oct or more e. Phase drift: Within ±0.01°/°C (≤ 10kHz) Within ±0.1°/°C (> 10kHz, <60kHz) Within ±0.2°/°C (> 60kHz) iii) Reference Signal System iv) Frequency range: 0.5mHz to 102kHz for TTL input or INT OSG, 0.5Hz to 102kHz for SINE input or SIGNAl v) External reference signal waveform: SINE/TTL POS/TTL NEG vi) Ratio indication: displays the ratio of X, Y and R to AUX input vii) Indication range: 0.000 to ±1.9999 viii) Resolution : 0.0001 ix) K constant range: 0.1000 to 1.9999, and 2.000 to 9.999 x) Common specification xi) Maximum output voltage:±12V xii) Maximum output current: ±6mA xiii) Output impedance: 1kΩ for DC xiv) Data resolution: 16 bits (reference signal frequency is 32 bits) xv) Recording capacity: 64k data xvi) Number of memory divisions: 1, 2, 4, 8, 16 and 32 xvii) Stamping interval: 1/16ms to 20s or by trigger signal	