



ACU/ACU-CRI/Re-tender/2061 /2019-20

Date 18.03.2020

### RE-TENDER NOTIFICATION

Adichunchanagiri University is inviting Closed Tenders for the supply of equipment for the Adichunchanagiri University Centre for Research and Innovation from the competitive firms.

1	Name of the work	Supply of equipment for Adichunchanagiri University Centre for Research and Innovation.
2	Tender documents available for download	12-03-2020 to 19-03-2020 up to 5:00 PM

Sl. No.	Equipment for Adichunchanagiri University - Center for Research and Innovation	Quantity (in No's)
1.	Muffle Furnace	1
2.	Vacuum Oven	1
3.	Hot Air Oven	1
4.	Liquid Nitrogen Plant	1
5.	UV/Vis Spectrophotometer	1
6.	Inverted Binocular Microscope with Camera	1
7.	Computational Workstation	1
8.	Fume Hoods	3
9.	Rotary Evaporator	1

**Note:** Kindly send quotes in 2 bid formats (Technical and Financial bids sealed separately for individual items) to be addressed to "The Registrar, Adichunchanagiri University, B.G. Nagara -571448, Nagamangala (T), Mandya (D)".

- Adichunchanagiri University reserves all the rights to accept, reject, incorporate changes and re-tender without giving any reasons.
- The sealed cover must be superscripted with the name of the equipment along with the words "ACU-CRI (Name of the equipment)". e.g., ACU-CRI Muffle Furnace.
- Mention the details of the contact person on the envelope.



## Technical Specifications

### 1. Equipment Name: Muffle Furnace

Input voltage	230V 50 Hz. $\pm$ 10% AC
Max. Temperature	1200°C
Heating by	Kanthal elements grooved with high temperature alumina tube
Display	LED / LCD Digital control with thyristor power pack, thermocouple and switchgears
Temperature Accuracy	$\pm$ 1°C ( $\pm$ 1.8°F)
Temperature Controller	PID controller
External Chamber Construction	MS Powder Coating / 304 Grade Stainless Steel (Optional)
Chamber size	W6×H6×D12 inches
Internal Chamber Construction	Ceramic Board & Grooved Refractory Chamber as per Temp. Requirement
Insulation	Ceramic wool insulation
Alarm	Audible & Visual type
Certification	ISO, CE & GMP
Stabilizer	As standard
Warranty	3 years

### 2. Equipment Name: Vacuum Oven

#### Temperature performance

Temperature range	+ 20 to + 300°C
Temperature consistency	$\pm$ 1°C
Time to reach extreme temperature value	Within 50 min to 70 min.

#### Pressure performance

Pull-down time	From atmospheric pressure to $9 \times 10^{-2}$ m bar Within 10 min to 15 min.
Atmospheric pressure recovery time	Inlet open to atmosphere within 1 min.
Pressure range	Up to 2 bar
Pressure control system	PID control
Ambient pressure	Less than 1 bar

#### Construction

Exterior material	MS Powder coated
Vacuum chamber	Stainless steel sheet (SS304)
Internal chamber	Stainless steel sheet (SS304)
Insulation	Glass wool



Heater	Tubular Heater
Inlet	R ¼ inch, max. pressure 0.5 kg/cm <sup>2</sup>
Exhaust port	OD φ28 mm, rubber hose connection port

### Oil rotary vacuum pump

Motor	415V AC 3φ 50/60Hz 550W
Pumping speed	200L/min.(50Hz),
Ultimate pressure	9×10 <sup>-2</sup> m bar
Auxiliary functions	Gas ballast valve, oil mist trap

### Others

Fittings	Levelling feet and casters (free wheel) 4pcs each,
Effective internal volume	55 L
Effective internal dimensions	W350×H450×D350 mm
Outside dimensions	W450×H550×D450 mm
Weight	250 kg
Shelf support load resistance	up to 10 kg (3 kg/stage, Total load of 3 stages)
Test area load resistance	up to 15 kg
Allowable ambient conditions	up to +35°C
Power supply	415V AC 3φ 50Hz CE 7.9 A
Control System	Thyristor power pack, PID controller, Safety controller, Alarm with hooter, Data logger for temperature (optional)
Warranty	3 years

### 3. Equipment Name: Hot Air Oven

Temperature range	+20 to +300°C
Temperature consistency	±1°C
Time to reach extreme temperature value	Within 50 min to 70 min.
Temperature control system	PID control
Door	Hinged side door open. The window uses heat-resisting glass & sandwich structure
Exterior material	MS Powder coated
Internal chamber	Stainless steel sheet (SS304)
Insulation	Glass wool
Heater	Tubular Heater
Motor	220V AC 1φ 50/60Hz 1HP
Fan RPM	1800(50Hz),
Effective internal volume	55 L



Effective internal dimensions	W350×H450×D350 mm
Outside dimensions	W450×H550×D450 mm
Shelf support load resistance	up to 10kg (3kg/ stage, Total load of 3 stages)
Test area load resistance	up to 15 kg
Allowable ambient conditions	up to +35°C
Power supply	415V AC 3φ 50Hz CE – 7.9 A
Control System	Thyristor power pack, PID controller, Safety controller, Alarm with hooter, Data logger for temperature (optional)
Warranty	3 years

#### 4. Equipment Name: Liquid Nitrogen Plant

Liquid Nitrogen Plant and Related Services:

Include all Parts/Equipment to produce Liquid Nitrogen from Surrounding air:

- Daily Capacity of production: ≥ 6 L/day.
- Auto Transfer and auto stop after filling.
- LN2 Purity: ≥98.6%.
- Noise: ≤ 72 db at meter.
- Power Input: 220 V, 50 Hz, Single Phase with necessary power cord.
- Two 10 L Dewar with Transfer tube.
- 10 L Dewar scale with Digital Read out Interface.
- Installation of the Device and start up.
- Extra filters if Needed for the system.

Warranty: 36 months.

#### 5. Equipment Name: UV-VIS Spectrophotometer (Both Reflectance and Transmission)

PC based high performance, double beam Spectrophotometer with software working in WINDOWS 10 environment for operation on 220V / 50Hz

Photometric System	Double beam optics
Monochromator	Czerny-Turner mounting with blazed holographic diffraction grating
Integrating Sphere	For powder and reflectance measurements
Wavelength Range	185nm to 900nm
Spectral Bandwidth	0.1 to 5 nm variable
Wavelength Accuracy	± 0.1 nm@ 656.1 nm D2
Wavelength Scan Rate	Minimum 1 nm/min to 4,000 nm/min
Stray Light	< 0.005% at 220nm ,340nm & 370 nm



Photometric Accuracy	$\pm 0.002$ Abs. at 0.5 Abs. & $\pm 0.003$ Abs. at 1.0 Abs.
Photometric Range	- 5 to 5 Abs.
Noise Level	0.00003 Abs RMS (500nm)
Light Source	50W Halogen and Deuterium lamp.
Detector	Photo Multiplier Tube (PMT)
<b>Software Features</b>	
General	Fully multitasking; Windows compatibility 32-bit operation for stable operation; QA/QC functionality; GLP/GMP support functions; flexible report generator, customized formats, editing of templates, multi-page print-out support; detailed on-line Help
Spectrum	Comparison of multiple spectra/relative processing, Audit trail functions, annotations, data normalization, peak/valley detection, point pick, peak area calculation, Derivative calculations up to 4th order, arithmetic calculations, interpolations, averaging.
Photometric/Quantitation	Single/Multiple wavelength and spectrum quantitation; K- Factor, Single point and Multi point curves; Photometric processing with user defined functions; weight corrections, dilution factor correction and other corrections; simultaneous display of standard, unknown tables and calibration curves; Display Pass/Fail indications.
Kinetics	Single/Dual wavelength measurement, simultaneous display of time course data, enzyme table and graphs; Enzyme Kinetics calculation etc.
Cuvettes	Two pairs of quartz cuvettes; 3 ml capacity, 10 mm path length.
Warranty	3 years

#### **6. Equipment Name: Inverted Research Microscope upgradable to Fluorescence**

- The microscope should be of modular design with infinity optics and possibility to upgrade to various applications at later stage-DIC, varel contrast, Hoffmann contrast and Plas DIC techniques.
- Microscope should have transmitted light illumination LED/Halogen and should have a provision to switch over to halogen/LED without replacing the stand.
- Microscope should have a Quintuple (5x) nosepiece pointing backwards with provision for DIC sliders
- Binocular Photo tube (100:0/0:100) with Sidentopf swiveling eyepiece tubes



- Pair of wide field 10x eyepieces with FOV of 23mm or more with focusable front lens and with rubber eyecups suitable for spectacle wearers and should have a provision to insert measuring graticules.
- Both the eyepieces should have diopter adjustment of  $\pm 5$ .
- Long working distance condenser with 0.40 NA, working distance of 50 mm and with slider for Bright field, Phase. Microscope should have provision to upgrade with high resolution 0.55 NA condenser for high magnifications with objectives up to 100x.
- Should have Infinity Color Corrected optical System
- Mechanical Stage with an object guide with X-Y drive knobs and holders for various specimen containers like petri dishes, slides, multi-well plates etc.
- Illumination: Transmitted illumination with LED/Halogen. The illumination control knob and ON/OFF switch should be low positioned for convenient operation.
- Objectives: 5x, 10x, 20x and 40x. 20x & 40x should be long working distance objectives.
- Should upgradable to minimum 7 channel fluorescence light source with integrated control unit for continuous brightness adjustment, quickly switchable and stable and integrated monitor diode for brightness adjustment with Red, yellow, Green, cyan, Blue Violet, UV range.
- High resolution, scientific grade Color/mono CMOS/CCD camera for fluorescence Imaging with resolution of more than 8 Mega Pixel, Spectral range of 400 to 700 nm or better, Frame Rate should be 30 fps at full resolution with C-mount Adapter 2/3" 0.5x
- Camera should work as a stand-alone without PC and possible to share the live images.
- Suitable Software to be provided for image capturing and should include stitching and z-stacking functions along with basic measurements
- The software, camera and the microscope should be from the same manufacturer.
- Suitable desktop computer with minimum configuration of intel core i7, 8GB RAM, 1 TB hard disk, Graphics card, 21.5 inch or higher monitor, licensed windows 10 operating system software.
- Warranty 03 year

### 7. Equipment Name: Computational workstation

Workstation / Server		Minimum requirement	Optional
CPU	2x Intel Xeon Scalable Processors	2x Intel Xeon Scalable Processors	Higher version if any



Cores	20 Cores	16 Cores	20-32 Cores
GPU	4x NVIDIA Quadro P5000 <b>Graphics card must support OpenGL 2.1 or greater</b>	16 GB On Linux, the graphics card <b>must have a 3-pin mini-DIN</b> to connect to the emitter if an external emitter is used. On newer Quadro cards like the P4000 and P5000 this connector is on an external bracket that connects to the main card via a jumper cable.	32GB
RAM	12x 16GB Memory	128 GB	512 GB
SSD	1x 512GB SSD (OS)	512 GB	720GB
HDD	1x 4TB HDD (Data)	2 TB	4 TB
Expansion Slots	At least 2 nos of PCIe slots	2	6
Operating System	ESXi, Ubuntu, Windows	Ubuntu, Windows	ESXi, Ubuntu, Windows
Minimum	2 x Gigabit Ethernet	2 x Gigabit Ethernet	4 x Gigabit Ethernet
Monitor	Should capable to handle graphic card requirements.	27 inches	32 inches
Keyboard	One standard keyboard with hotkeys	01 no.	01 no.
Mouse	One standard mouse	01 no.	01 no.
External Hard disk (SSD)	512 GB	512 GB	1TB

### 8. Equipment Name: Fume Hood with Storage

Material of Construction	Non-metal construction White Polypropylene Sheets 10 mm thick
Front Sash	Toughened Glass 6 mm thick manually sliding type with counter-weight mechanism and handle to operate.
Counter-weight mechanism	MS Cylindrical weight
Sink MOC	White Polypropylene
Sink dimension (internal)	300 × 300 × 250 mm
Drain pipe	Should be provided with this hood up to the extent of 2.5 m.
Electrical Socket arrangement	As described in the UTILITIES table.
Lighting arrangement	22 w - 1 Nos (LED) 9/10 w - 2 Nos (LED).



	These lights should comprise wiring and switches placed outside of the work area. All wires / cable should be concealed in PVC flexible casing. PVC Box and plate for the socket and switches should be placed on the front fascia so to provide easy access.
Dimension - Work Area	1675 × 915 × 915 mm.
Work surface Height from floor	900 mm.
Storage	Under worktop storage shelves (bottom only) with PP shutters mounted to the Hood using hinges and handles to operate the shutters and one trolley made in PP.
Exhaust blower	Suitable Exhaust blower with PVC pipe, clamps etc.

### UTILITIES

Fume Hood - Lab 1	Gas Valves for Oxygen, Nitrogen, Carbon Dioxide, Raw Water and Vacuum Elec. Sockets - 15/5 A - 4 Nos. PP Sink - 300 × 300 × 250 mm. Distillation grid in PP
Fume Hood - Lab 4	Gas Valves for Oxygen, Nitrogen, Hydrogen, Water and Vacuum Elec. Sockets - 15/5 A - 4 Nos. PP Sink - 300 × 300 × 250 mm. Distillation grid in PP
Fume Hood - Lab 5	Gas Valves for Nitrogen, Carbon Dioxide, Water and Vacuum Elec. Sockets - 15/5 A - 4 Nos. PP Sink - 300 × 300 × 250 mm. Distillation grid in PP

### 9. Equipment Name: Rotary Evaporator

- The system should be supplied with Motorized Lift
- The system should have digital 3.5" LCD display of set and actual bath temperature & rotation speed.
- The system should accommodate 50 ml to 5000 ml with single joint size.
- The system should have rotation speed from 10-280 rpm
- The system should have separate operating knobs for adjusting heating & rotation speed with LED system for activity indication.
- The system should have locking facility for set temperature and rotation speed to prevent accidental change in set conditions during process
- The system should have stand-by mode with display of residual heat >50°C for higher safety







- The system should have detachable panel to safeguard all electronic components
- The condenser should have height adjustment up to 155 mm & inclination angle of 20°- 80°
- The system should have universal heating bath from 20 to 210°C with accuracy of  $\pm 1^\circ\text{C}$
- Overheat protection bath - cut-off at 5°C over set temperature via separate PT 1000
- The heating bath volume should be 4-5 Litres.
- The heating bath should have power cable of high protection class to protect from short circuits & corrosion.
- The heating bath metal base support to avoid instability
- The system should have vapor tube with sleeve to allow easy removal and cleaning
- The system should have clip made of resistant synthetic material with integrated screw thread for fixing and removal of evaporation flasks firmly
- The system should be supplied with vertical condenser
- The system should have grease free ventilation cap for maximum tightness and avoid stuck glass joints.
- The system should be supplied with 1000 ml evaporation and 1000 ml receiving flask - 2 each
- Operating Voltage / Frequency: 230 V, 50 Hz
- Heating Power Consumption: 1300 W
- CE certification

#### **Vacuum Pump**

- The pump should be two stage chemical resistance oil-free diaphragm pump
- The pump should have ultimate vacuum  $10 \pm 2$  mbar
- Suction capacity -  $0.75 \text{ m}^3/\text{h}$
- Power Input: 80W

#### **Chiller**

- Chiller should have operating Temperature Range:  $-10^\circ\text{C}$  to  $+100^\circ\text{C}$  with temperature accuracy of  $\pm 0.2^\circ\text{C}$
- It should have LCD Microprocessor Digital controller, Pt 100 sensor with Timer function
- Audible and visual alarm for temperature and water level
- It should have a cooling capacity of 800 watts @  $20^\circ\text{C}$
- It should have reservoir capacity of 4.5 L and flow rate 8L/min
- Interior dimension should be  $150 \times 160 \times 150$  mm
- Power supply: 230V, 50Hz

  
Dr. C.K. Subbaraya'

Registrar  
Adichunchanagiri University  
B.G.Nagara-571448