



Research Facilities

Material Properties, Characterization and Manufacturing Research Facilities

| SI. No. | Name of the Instrument, Model & Manufacture |
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| 1. | CNC Machine |
| 2. | Universal Testing Machine |
| 3. | Micro Hardness Tester and Wear Testing Machine |
| 4. | Hydraulic Press |
| 5. | 3D Printed Technology |
| 6. | Computational Fluid Dynamics Research Facilities |
| 7. | Electronic Balance |
| 8. | pH Meter |
| 9. | Muffle Furnace |
| 10. | Constant Temperature Bath |
| 11. | Distilled Water Plant |
| 12. | Hot Plates |
| 13. | Magnetic Stirrers |
| 14. | Electrochemical Analyzer CHI 604 D |
| 15. | UV-Visible Spectrophotometer Systronics |
| 16. | FT IR Affinity-1 Shimadzu |
| 17. | Gel Documentation System Genei Merck |
| 18. | Rotovap Superfit |
| 19. | Incubator Technico |
| 20. | Deep Freezer Blue Star |

Process Control, Payload and Simulation Research Facilities

| SI. No. | Name of the Instrument, Model & Manufacture |
|---------|---|
| 1. | Distributed Control System (DCS) and Programmable Logic Controllers (PLC) & SCADA |
| 2. | Electronics and Communication and Payload Lab |
| 3. | Lab is Equipped with the Following Software and Tools for Research <ul style="list-style-type: none">• MATLAB• WEKA• NS2• Cloudsim |

Nano Characterization Instruments Research Facilities

| SI. No. | Name of the Instrument, Model & Manufacture |
|---------|---|
| 1 | Atomic Force Microscope, XE-70, Park System, Korea |
| 2 | Electro Chemical Work Station, CHI Instruments 604 D, USA |
| 3 | Particle Size Analyser, CPS Instruments DC 12000, USA |
| 4 | FTIR, Bruker, Alpha T, Germany |
| 5 | TG/DTA, SIINT 6300, Japan |
| 6 | Ball Mill, PM 100, Germany |
| 7 | Elga Ultra-Pure Water, Pure lab Q7, UK |
| 8 | UV-Vis Spectrophotometer, Systronics, 2202, India |



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| 9 | Surface Area Analyzer, Smart Instruments SS-9, India |
| 10 | BH Curve Tracer, BHCT-CRO, India |
| 11 | UPS for AFM, MU 300, Matrix India |
| 12 | XRD, D2 Phaser, Bruker Germany |
| 13 | UPS for XRD, Power One Micro Systems India |
| 14 | Raman Spectrometer, EZ Raman Enwave Optronics, USA |

Nano Synthesis Instruments Research Facilities

| SI. No. | Name of the Instrument, Model & Manufacture |
|---------|---|
| 1. | Digital Electronic Balance, D432813364, Japan. |
| 2. | Electric Water Bath Double Walled, NLWB 6, New Lab Equipment, India. |
| 3. | Hot Air Oven, Type: AVSO4A, Eltek Equipment Private Ltd, Mumbai. |
| 4. | Heating Mantel, 2486, Guna Enterprises, India. |
| 5. | Mechanical Stirrer Remi Make, FOL 1756, Rajendra Electrical Instruments Limited, India. |
| 6. | Magnetic Stirrer, Rajendra Electrical Industry Limited, India. (2Nos) |
| 7. | Vacuum Pump, Ambika Enterprises, India. |
| 8. | UV Lamp with Fitting Long Ware, United Scientific |
| 9. | Double Distilled Water Plant, United Scientific |
| 10. | Hair Drier, Salon Compact 1000w, Philips. |
| 11. | Vacuum Oven, Technico. |
| 12. | Muffle Furnace, United Scientific |
| 13. | Spin Coater, Spectrospin Instrument Inc. India. |
| 14. | Magnetic Stirrer, Remi Electro technic Limited, Vasai-India. |
| 15. | Centrifuge Model (R-8C), Remi, Electro Technic Limited, India. |
| 16. | Ultrasonic Cleaner, United Scientific |
| 17. | Gun For Liq Spray, Type59, pilot spray gun, Manic Machinery Manufactures Private Limited, Mumbai. |
| 18. | Air Compressor, Indian Make Gajendra. |
| 19. | Ultrasonic Prope Sonicater, PS-3182 |

Nano Applications & Instruments Research Facilities

| SI. No. | Name of the Instrument, Model & Manufacture |
|---------|--|
| 1. | Autoclave, Sujha Surgical |
| 2. | Laminar Flow Combiner, B8C Industries, India. |
| 3. | Peristaltic Pump, Mumbai, India. |
| 4. | Heating Mantel, Rotex Instruments, B&C Industries, India. (2Nos) |
| 5. | Incubator, Rotek, India. |
| 6. | Magnetic Stirrer, Guna Enterprises, India |
| 7. | Hot Plat Ceramic Top, Tarson. |
| 8. | pH meter, Pen Type, Sujha Surgical |
| 9. | Orbital Shaking Incubator, LAB Line Industries, Cochin India. |

Advanced Nano Material Instruments Research Facilities

| SI. No. | Available Major/Minor Equipment's/Apparatus |
|---------|---|
| 1. | Fluorescence Spectrophotometer (SL174, ELICO) |



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| 2. | NIR Spectrophotometer (SL153, ELICO) |
| 3. | Planetary High Energy Ball Mill |
| 4. | High-Temperature Tubular Furnace (1600°C) |
| 5. | Groove Rolled Box Furnace (1000°C) |
| 6. | Muffle Furnace (900°C) |
| 7. | Glove Box |
| 8. | Electronic Balance (Shimadzu, Japan) |
| 9. | Electronic Balance (Anamed, India) |
| 10. | Hot Air Oven |
| 11. | Hydraulic Press |
| 12. | Air Compressor |
| 13. | Vacuum Pump |
| 14. | Heating Mantles |
| 15. | Ultra Sonicator |
| 16. | Mechanical Stirrers |
| 17. | Water Bath |
| 18. | Laboratory Centrifuge REMI - 8C (5400 rpm) |
| 19. | Bench Top Centrifuge Model R- 24 REMI (17300 rpm) |
| 20. | Autoclaves (for Hydrothermal Synthesis) |
| 21. | Water Distillation Plant |
| 22. | pH Meter |
| 23. | Microwave Oven |
| 24. | IR Lamp |
| 25. | UV Lamp |
| 26. | Oxygen Cylinder with Regulator |
| 27. | Nitrogen Cylinder with Regulator |
| 28. | Argon Cylinder with Regulator |

Cloud Computing Centre Research Facilities

| Sl. No. | Name of the Instrument, Model & Manufacture |
|---------|---|
| 1. | Server PANARO NX 2600-DPX-H2-RPS-2U-LFF (PN15400014) 32GB ECC DDR4 RAM, 1TB SATAx4, 8 Hotswap Bays, 550W RPS, Intel Xeon 2620v4 X2, Integrated RAID, 10G Dual SFP+, 3 Years Warranty HSN Code: 84715000 |
| 2. | Network Attached Storage AWANSTOR IX Network Attached Storage (PA26580001), S8224-E5420 4U 24 Bay, 48GB RAM, 4TB NL SASx12 Nos (48TB RAW), NFS/CIFS/iSCSI/AFP Perpetual License, HSN Code:84717090 |



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| 3. | Computer Lenovo V520ST 10NLA011IH, Intel Core i5 7 th Gen, 4GB DDR4 RAM, 1TB HDD, DOS + Monitor 19” 3Years Warranty Lenovo Keyboard, Lenovo Mouse |
| 4. | Switch Cisco 24/2 Port Giga Switch |
| 5. | Network Switch Aruba 2930M 1-Slot Switch (JL321A) |
| 6. | Firewall Panaro FX High End Multi WAN Firewall 5 x 1 Gigabit WAN Connections 1 x 1 Gigabit LAN, 1 x 1 4GB RAM 1 x Intel Quad Core 64 Bit Processor 240W Inbuilt Power Supply 1 x 1U Rackmount Clamp Kit Unlimited Users, Perpetual License |
| 7. | Router TP Link Archer C2 AC900 Gigabit Router Wireless Dual Band Gigabit Router |
| 8. | Printer Canon PIXMA G3000 All in One Wireless Ink Tank Color Printer |
| 9. | Microsoft Imagine Subscription (3 Years) |
| 10. | VMware IT Academy Subscription (3 Years) |
| 11. | Operating System WinPro 10 SNGL OLP NL Acdmc Legalization |

Advanced Humanoid Robotic Centre Research Facilities

| Sl. No. | Items | Specification |
|---------|----------------------------------|--|
| 1. | SANBOT Humanoid Robot | Size: 92 cm (Height) x 30 cm (Depth) x 40 cm (Width) Weight: 19kg |
| 2. | Charging Pile (Contains Adaptor) | Spring strip(electrified with 19V) |
| 3. | Power Line | - |
| 4. | Battery | Type: Lithium Battery Capacity: 20Ah/300W Running time: about 10 Hours, Standby for Over 20 Hours |
| 5. | Sensor | Mic |
| | | RGB Camera |
| | | 3D Sensor |
| | | Touch Sensor |
| | | Gyroscope Sensor |



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| | | Human Body Induction Sensor |
| | | IR Evading Obstacle Sensor |
| | | IR Message Receiving Sensor |
| | | Touch Sensor |
| | | Electronic Compass Sensor |
| | | IR Evading Obstacle Sensor |
| | | Touch sensor |
| | | IR Evading Obstacle Sensor |
| | | Omni Wheel |
| 6. | Moving Parts | Head :2 x DOF (180 Degree at Horizontal Direction, 30 Degree at Vertical Direction) Hand :1x2(L/R) DOF (270 Degree Swing Back and Forth) Leg :3 x DOF (Free Angle) |
| 7. | Video | 8.0MP HD Camera 1.0MP HD Color Camera with 140 Degree Aspheric Surface Angle |
| 8. | Display | 10.1 inch 1080P HD Capacitance 10-Point Touch Display |
| 9. | Projection | Laser 1920 x 720 HD Wide Gamut Output, 60Hz, Aspect-Ratio: 16:9 |
| 10. | Platform | ROS1.1 |
| 11. | Sound | Voice Control, 360 Degree Sound Localization Tweeter Woofers |
| 12. | WIFI Network | IEEE 802.11 a/b/g/n (2.4 GHz/5 GHz) |
| 13. | Wireless Network | Bluetooth 4.0、 ZigBee |
| 14. | Atmosphere Lamp | 250 Kinds Customized Colors, 2 Cycles for Ears , 2 pcs for Hands, and 1 Cycle for Chassis |
| 15. | Moving Speed | 0.8 m/s Max |
| 16. | Grade | 1.5 cm Max |