MANIPAL UNIVERSITY
JAIPUR

CENTRAL RESEARCH FACILITIES

About Manipal University Jaipur

Manipal University Jaipur (MUJ) is a dynamic and forward-thinking private university situated in Jaipur, Rajasthan, India. Established in 2011 as part of the esteemed Manipal Education Group, MUJ is committed to providing high-quality education across various disciplines. The university boasts a modern campus equipped with state-of-the-art facilities, fostering a conducive environment for learning and research. MUJ offers a diverse range of undergraduate, postgraduate, and doctoral programs, emphasizing industry-relevant curriculum and experiential learning. With a focus on research, innovation, and international collaborations, Manipal University Jaipur strives to nurture well-rounded individuals ready to tackle the challenges of the ever-evolving global landscape.

The university's commitment to holistic education is reflected in its vibrant student life, encompassing cultural events, sports activities, and a dedicated placement cell to facilitate students' professional journeys.

Scan the QR Code
For Virtual Tour of the Campus

ACCREDITATIONS & RECOGNITIONS

ज्ञान-विज्ञान विमुक्तये
UGC
(University under Section 2 (f) of the UGC Act)

AICTE

Bar Council of India
(Law Programs)

Council of Architecture
(Architecture Programs)

RANKINGS 2023
University:101-150
Engineering: 76
Management: 79 | Law:29

Accredited with
NAAC A+ Grade
with 3.28 Score

NBA Accredited Programs
Year 2021-24
B.Tech. - CSE, IT, ME, Mechatronics, ECE
Year 2023-26 : B.Tech. - CCE, MBA

Overall (World): 1201-1500
Overall (India): 58th Rank
Quality Research (World) : 964th Rank

Overall
601-800

Regional Ranking: 801+ Band
Southern Asia: 258

Engineering : 601- 800
Computer Science : 801- 1000
Physical Science : 1000+

Atal Incubation Centre- MUJ (AIC- MUJ) established to promote the culture of innovation and entrepreneurship

MUJ HIGHLIGHTS

71 Years of Established Legacy of Manipal Education

Land Area: 122 Acres Built-up Area: 4.0 Million Sq. Ft.

100+ National & International Collaborations with Institutes and Universities

STATE-OF-THE ART INFRASTRUCTURE






Central Research Facilities

Manipal University Jaipur (MUJ) stands as a distinguished institution at the forefront of education and research, embodying a steadfast commitment to fostering scientific and technical advancements. The University proudly hosts two cutting-edge centralized research labs under the Directorate of Research: The Sophisticated Analytical Instrument Facility (SAIF) and the Central Analytical Facility (CAF). SAIF and CAF are equipped with state-of-the-art instruments catering to the needs of cutting-edge research in many areas of modern science and technology, making them pivotal hubs for multidisciplinary research in both science and engineering departments. These instruments are maintained and operated by highly skilled and experienced technical personnel who offer training and support to users, ensuring efficient and accurate data acquisition. Thus, the impressive assortment of high-end equipment at Central Research Facilities under DOR at Manipal University Jaipur plays an important role in the university's research ecosystem by fostering an environment of scientific excellence and innovation. The university's commitment to scientific and technical research extends beyond its internal community, reaching out to external stakeholders, including other universities, academic institutions, and commercial organizations. MUJ actively promotes collaboration, providing access to its centralized research facilities on a chargeable basis. This inclusive approach underscores the institution's dedication to advancing research, innovation, and collaboration, thereby contributing to the broader scientific and technological landscape.

Sophisticated Analytical Instrument Facility (SAIF)

The Sophisticated Analytical Instrument Facility (SAIF) is a facility created at MUJ to host a range of sophisticated instruments to provide comprehensive insights into the physical properties and composition of materials. Moreover, these instruments are of inter/multidisciplinary utility and hence are put under one roof at a central facility so that they can be shared by the different R&D groups of the university for their optimum utilization. The facility is managed by a team of skilled scientific personnel who provide expert technical support enabling efficient data collection with feasibility to analyse and interpret the same. With the high level of expertise available at MUJ, the excellent analytical services of the facility are also offered on a chargeable basis to other Universities, Academic Institutions, and Commercial Organisations.

Room No. 017 & 018, Ground Floor, Academic Block-2

Central Analytical Facilities (CAF)

The Central Analytical Facilities (CAF) is equipped with an array of state-of-the-art instruments to investigate and analyze materials and their physical and chemical properties. The facility's exceptional infrastructure and expert personnel make it an indispensable resource for scientific investigation and innovation. Internal users, including faculty members, research scholars, and postgraduate students, can utilize CAF to enhance their research endeavors. CAF not only supports the research needs of the science and engineering departments at the university but also opens its doors to external users, including research scholars and industries, on a chargeable basis. The facility serves as a hub for cutting-edge material characterization, aiding innovation and industrial development.

Room No. 313, 3rd Floor, Academic Block-1

Objectives of Central Research Facilities:

Objective 1: Enhance Accessibility and Outreach

Develop and implement strategies to enhance awareness and accessibility of the Central Research Facilities by conducting targeted outreach programs to inform internal stakeholders (faculty, research scholars, and postgraduate students) and external users (other universities, academic institutions, and commercial organizations) about the diverse range of sophisticated instruments available, the expert technical support, and the opportunities for collaboration and utilization on a chargeable basis.

Objective 2: Strengthen Collaborative Research Initiatives

Facilitate and promote collaborative and interdisciplinary research initiatives that leverage the capabilities of both SAIF and CAF. Develop a framework to support collaborative projects with external users, including industries, aiming to address real-world challenges and contribute to scientific advancements.

Objective 3: Conduct Technical Training Programs

Conduct technical training programs to ensure that users, including faculty members, research scholars, and industry professionals, receive comprehensive training on the operation and application of key instruments. This will contribute to the skill development of researchers and enhance the overall efficiency of the research conducted at the Central Research Facilities.

Objective 4: Implement Continuous Upgradation of Instrumentation

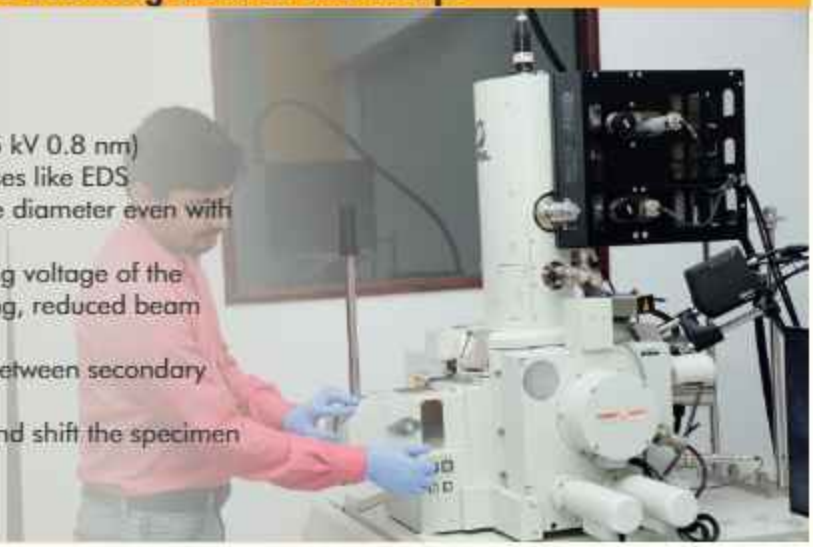
Develop and implement a plan for the regular upgrading of instruments within SAIF and CAF to ensure that the facilities remain at the forefront of technological advancements. Also, collaborate with industry partners, research organizations, and funding agencies to secure resources for the procurement and installation of state-of-the-art instruments.

Objective 5: Establish a Transparent and Efficient User Fee Structure

Review and optimize the existing user fee structure for accessing the Central Research Facilities, making it transparent, competitive, and reflective of the operational costs and maintenance requirements. Regularly assess and update the fee structure based on feedback, usage patterns, and changes in operational costs to ensure sustainability and financial viability for the continued operation

Field Emission Scanning Electron Microscope

JEOL JSM-7610F Plus



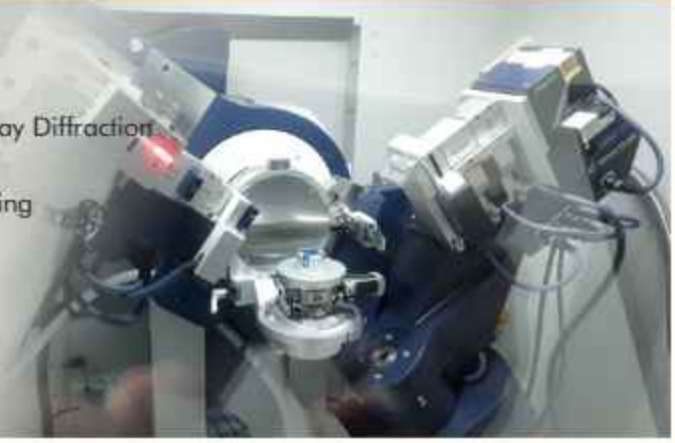
Specifications:

High spatial resolution (1 kV 1.0 nm, 15 kV 0.8 nm)
High probe current for analytical purposes like EDS
High power optics to ensure small probe diameter even with large probe current
Gentle Beam mode to reduce the landing voltage of the electrons suitable for top-surface imaging, reduced beam damage and charge suppression
Energy filtered imaging to freely select between secondary electrons and backscattered electrons
Eucentric specimen stage to rotate, tilt and shift the specimen with minimal focus deviation

SAIF, Room No. 017, Ground Floor, Academic Block-2

X-ray Diffractometer

RIGAKU SmartLab



Specifications:

High resolution powder, polycrystalline, thin film X-Ray Diffraction
Grazing Incidence X-Ray Diffraction (GIXRD)
In-plane Diffraction with a horizontal sample mounting
Residual Stress and Texture (Pole figure)
Non-ambient analysis for phase transition study
X-ray reflectometry (XRR), Rocking curve
Small-angle X-ray scattering (SAXS)

SAIF, Room No. 018, Ground Floor, Academic Block-2

Raman Spectrometer

Horiba LabRAM HR Evolution

Specifications:

Unequaled spectral resolution with 800 mm focal length
Fully achromatic system 200-2200 nm from sample to detector
Spectra Repeatability: 0.1 cm^{-1}
Spectral Scanning Linearity: $< \pm 0.5\ cm^{-1}$
Lasers: 325nm He-Cd (25 mW), 532nm Nd:YAG (100 mW) 785nm laser diode (100 mW)
Polarisation-dependent Raman measurements (400-1100 nm)
Variable Temperature Measurement (–196°C to 600°C)

SAIF, Room No. 018, Ground Floor, Academic Block-2

Gas Chromatograph with Mass Spectrometer (GCMS)

Shimadzu GCMS-QP2020

Specifications:
EI Source
Mass range m/z 1.5-1090
Modes: Scan, SIM, FASST (Fast Automated Scan/SIM Type)
High-speed scan rate: 10,000 u/sec
Equipped with NIST Library

CAE Room No. 313, 3rd Floor, Academic Block-1

Gas Chromatograph (GC)

Shimadzu GC-2014

Specifications:
Temperature range : up to 400°C
Detectors : FID and TCD
Minimum detected quantity : 3pgC/s (dodecane) in FID

CAE Room No. 313, 3rd Floor, Academic Block-1

Atomic Absorption Spectrometer (AAS)

Shimadzu AA7000F

Specifications:

Wavelength range	: 185 to 900 nm
Lamps available	: Cr, Fe, Hg, Pb, Cd, Cu, Zn, Co, As, Al, Mn & Ni
Measurement mode	: Flame continuous method & flame micro sampling method
Burner type	: Air-C_2H_2 flame, N_2O-C_2H_2 flame
Detection limit	: ≤ 0.006 ppm

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High Performance Liquid Chromatograph (HPLC)

Agilent 1260 Infinity II

Specifications:
Reliable injections from 0.1 µL to 100 µL
Flow range : 0.2 – 10.0 mL/min
DAD : Wavelength range (190 – 950 nm)
RID: Refractive index range (1.00 – 1.75 RIU)

CAE Room No. 313, 3rd Floor, Academic Block-1

Thermogravimetric-Differential Thermal Analyzer (TG-DTA)

Shimadzu DTG-60H

Specifications:
Temperature range : Room temperature to 1000°C
Pan : Alumina
Measurable range : ± 500 mg
± 1000 μV

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Photoluminescence (PL) Spectrometer

Horiba FluoroMax-4

Specifications:
Optics : All refractive
Water Raman signal-to-noise ratio: 16000:1 (6000:1 FSD)
Fast Scanning capability - up to 80 nm/second
Integration time : 0.001-160 s

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Optical Contact Angle (OCA) Analyzer

Dataphysics OCA 15EC

Specifications:
Max. sample dimensions (LxWxH) : 220x∞x70 mm
Max. sample weight : 3.0 kg
Measuring range : 0-180°±1°
1.10^{-2} - 2.10^{3} mN/m

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Ultra-Violet-Visible (UV-Vis) Spectrophotometer

Shimadzu UV-2600

Specifications:
Photometric system : Double beam optics
Measurement range : 200-900 nm (conventional mode)
200-1400 nm (using integrated sphere)
Photometric modes : Absorbance (Abs), Transmittance (%T), Reflectance(%R)

CAE, Room No. 313, 3rd Floor, Academic Block-1

Fourier Transform Infra-red (FTIR) Spectrometer

Bruker ALPHA

Specifications:
Spectral Range : 4000 to 500 cm^{-1}
Resolution : 0.8 cm^{-1}
ATR Crystal : ZnSe,
Operating pH 4-8
Signal to noise ratio : 50000:1 peak to peak

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BET Surface Analyzer

Anton Paar Autosorb iQ XR AG Viton

Specifications:

Capable of measuring pore sizes down to 3.5 Å and surface areas down to < 0.01 m^2/g

Combines a 90+ hour analysis Dewar with an advanced active coolant level control system ensuring highly sensitive measurements

All the analysis stations have their dedicated manifold and set of transducers for fast analysis

Software-controlled integrated degassing coupled with turbo pump and cold trap to ensure moisture removal from the deepest micropore

Advanced data reduction regimes for more accurate analysis results

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Dynamic Light Scattering Instrument

Anton Paar Litesizer 500

Specifications:

Particle characterization from the nano- to the micrometer range

Particle size measurements via dynamic light scattering at three different measurement angles

Determination of Zeta potential (>=+/- 1000mV)

Six parameters measurement: size, zeta potential, molecular mass, A2, transmittance, and refractive index

Molecular mass and refractive index measurements with continuous transmittance monitoring

CAE, Room No. 313, 3rd Floor, Academic Block-1

Contact

Director, Research

Dr. Roheet Bhatnagar
Professor
Tel: +91-141- 3999100, Ext: 234
Mob:+91-8003897115
Email: roheet.bhatnagar@jaipur.manipal.edu

Deputy Director, Central Research Facilities

Dr. Nilanjan Halder
Associate Professor
Tel: +91-141- 3999100, Ext: 208
Mob:+91-9783784795
Email: nilanjan.halder@jaipur.manipal.edu

Scientific Officers

Dr. Ajay Saini
Central Analytical Facilities (CAF)
Tel: +91-141-3999100, Ext.: 853
Email :caf@jaipur.manipal.edu
ajay.saini@jaipur.manipal.edu

Mr. Vinay Sharma
Sophisticated Analytical Instrument Facility (SAIF)
Tel: +91-141-3999100, Ext.: 323
Email : vinay.sharma@jaipur.manipal.edu,
analyticalfacility@gmail.com

Mr. Shobh Nath Yadav
Sophisticated Analytical Instrument Facility (SAIF)
Tel: +91-141-3999100, Ext.: 323
Email : shobh.yadav@jaipur.manipal.edu

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Dehmi Kalan, Jaipur-Ajmer Expressway, Jaipur, Rajasthan - 303007

saif@jaipur.manipal.edu | caf@jaipur.manipal.edu

jaipur.**manipal**.edu | +91 141-3999100, Ext. No.- 323, 853

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