



Welcome to SATHI



IIT Kharagpur





# Sophisticated Analytical & Technical Help Institute (SATHI)

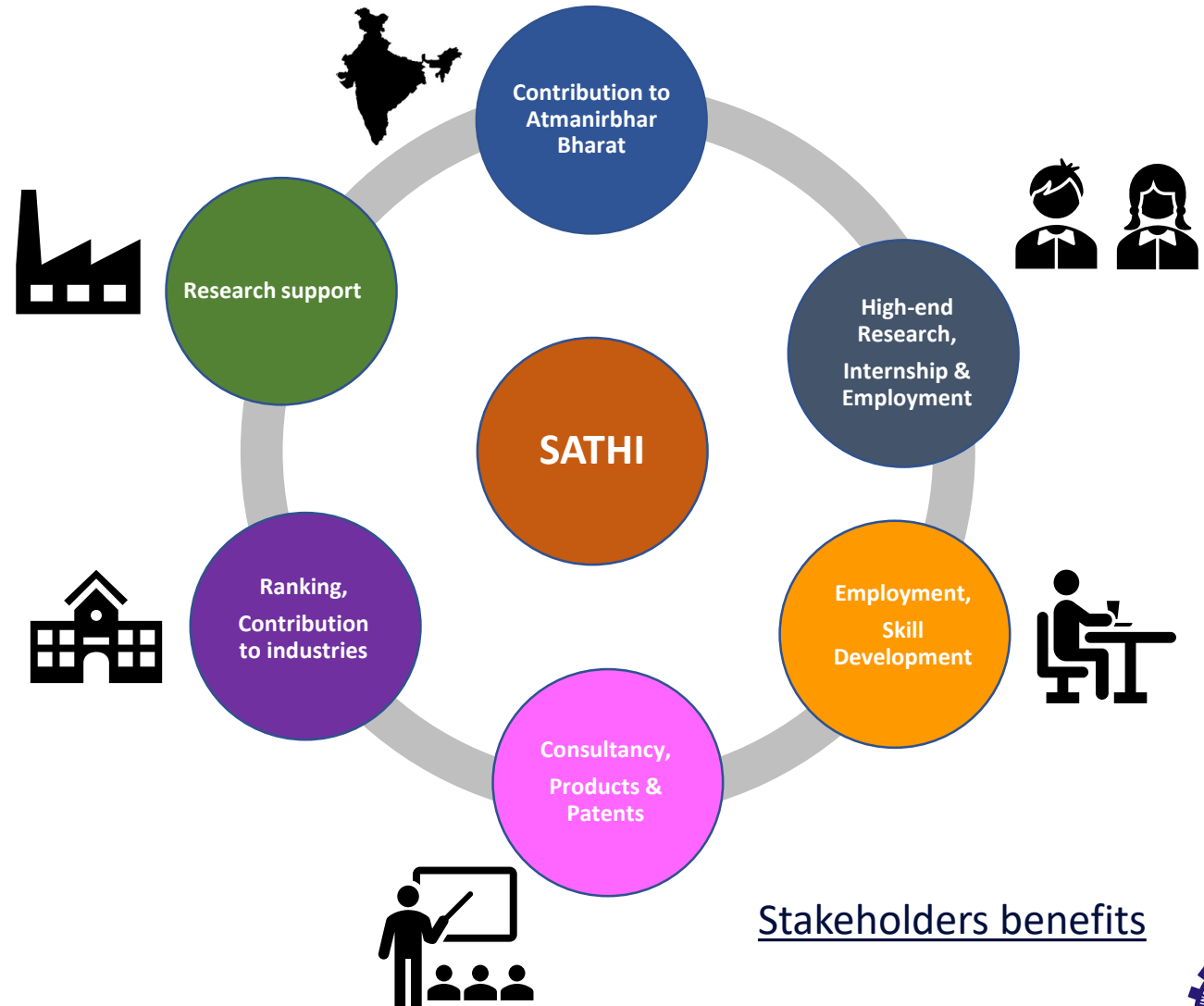
An initiative by DST, Govt. of India towards Atmanirbhar Bharat

A National Analytical facility for start-ups, MSMEs, large scale industry and academia

Theme (SATHI@IIT Kharagpur)

- Nano-scale characterization of structure and composition
- Mechanical testing at ambient and elevated temperatures in controlled environment

Services Characterization, Testing, Fabrication, Scientific analysis and interpretation, generation of data & knowledge dissemination, Training Manpower





# SATHI FOUNDATION IIT KHARAGPUR



IIT Kharagpur has procured the high value sophisticated equipment from the fund sanctioned by DST for the creation of SATHI-IIT Kharagpur, which has been transferred to SATHI Foundation IIT Kharagpur (a Section 8, not for profit company of IIT Kharagpur) for the professional management of the SATHI-IIT Kharagpur centre with a view to provide the best-in-class services to the users of our facility. SATHI Foundation IIT Kharagpur hired professional man power for the optimal and efficient utilization of the major equipment facilities. NABL accreditation will be taken for the instruments required for providing analytical and certification services to the industry. SATHI Foundation is organizing awareness and training programs to sensitize the potential users of the facility so as to encourage them to use it. It also connects the potential user with the experts in the IIT Kharagpur related to each instrument. SATHI Foundation IIT Kharagpur is also planning to form a cluster in the region to develop the Science and Technology through hub and spoke model.



# SATHI at IIT Kharagpur was formally inaugurated by the Secretary, DST Prof Abhay Karandikar on the 12<sup>th</sup> of April 2024



# Aberration Corrected HRTEM with STEM, EDX and EELS

## Main Specifications

| Parameter       | Range   |
|-----------------|---------|
| Acc. voltage    | 300 kV  |
| Electron gun    | Cold FE |
| STEM resolution | 58 pm   |
| TEM resolution  | 50 pm   |

**STEM (HAADF) detector:** to obtain Z-contrast images

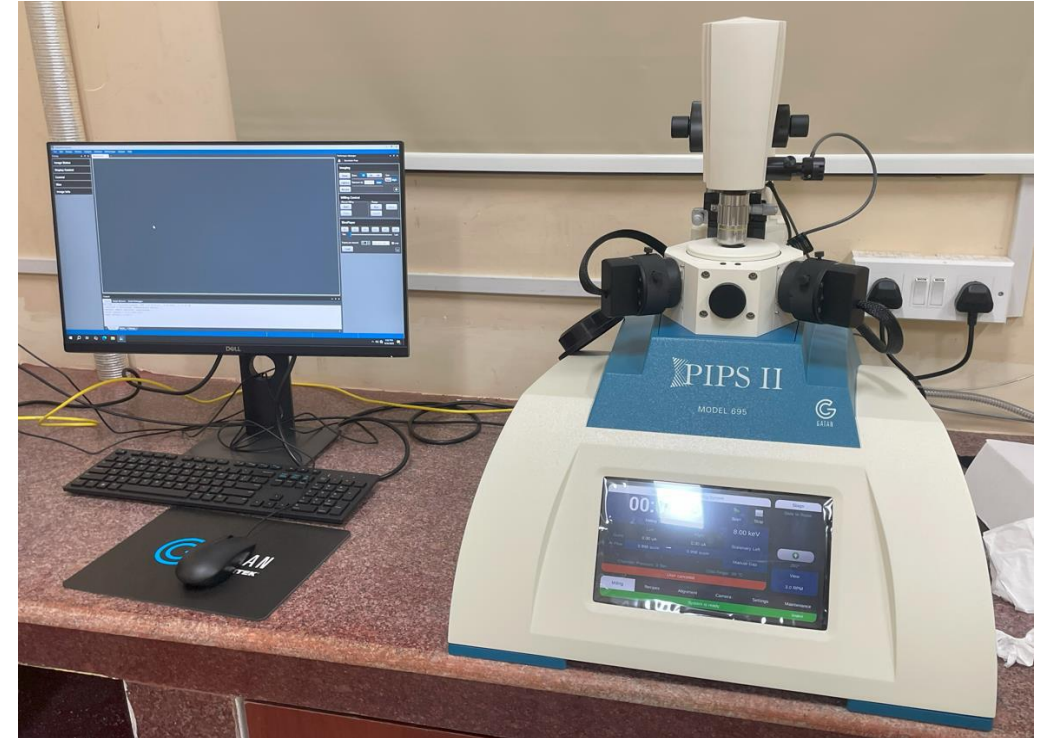
**EELS detector:** to detect elements from hydrogen onwards and obtain chemical bonding information

JEM-ARM300F (JEOL)



Professor in Charge: **Prof Debabrata Pradhan**, Materials Science Center  
Co-In-charge: **Prof Ahin Roy**, Materials Science Center

# HRTEM Sample Preparation Lab



PIPS (Precession ion Polishing System), Dimple-grinder, ultrasonic disc cutter, and 3 mm disc punching machine

# Time-of-Flight Secondary Ion Mass Spectrometer (TOF-SIMS)

## Features

- Characterization of chemical composition of both conducting and insulating surfaces
- Ability to detect all elements in periodic table, starting from hydrogen
- Imaging to map the surface distribution of species
- In the spectroscopy and imaging modes, only the outermost 1-2 monolayers of the sample surface are analyzed
- Chemical analysis with depth profiling



Professor in Charge: **Prof Rahul Mitra**, Metallurgical & Materials Engineering  
Co-In-charge: **Prof Tapas Laha**, Metallurgical & Materials Engineering

# Vacuum & Inert Gas Universal Testing Machine (UTM)



## Features

- Load cell capacity: 50 kN.
- Electromechanical load frame capable to perform both stress-controlled and strain-controlled testing facility
- Non-contacting laser and video extensometer, contacting axial entry extensometer, DCPD system for accurate strain measurement at elevated temperature.
- Furnace with 3 furnace-thermocouples.
- Suitable for both round and flat specimens.
- Continuous testing possible up to 10,000 h.

Professor in Charge: **Prof Debalay Chakrabarti**, Metallurgical & Materials Engineering

Co-Professor in Charge: **Prof Siddharth Tamang**, Mechanical Engineering

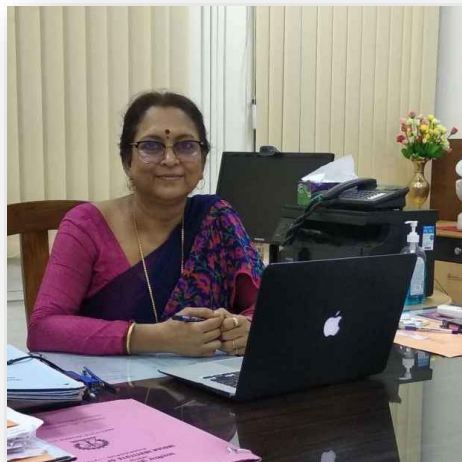
# SATHI Foundation IIT Kharagpur – Board of Directors



**Prof. Suman Chakraborty**  
Chief Managing Director  
SATHI Foundation IIT  
Kharagpur and Director,  
IIT Kharagpur



**Prof. Rintu Banerjee**  
Director SATHI Foundation  
IIT Kharagpur and Dean  
(R&D), IIT Kharagpur



**Prof. Rabibrata Mukherjee,**  
Director SATHI Foundation,  
IIT Kharagpur and  
Dean (SRF), IIT Kharagpur



**Prof. Rahul Mitra, Chairman, SATHI**  
Prof.-in-Charge, ToF-SIMS  
Sr. Prof. Dept. of Metallurgical and  
Materials Engineering, IIT Kharagpur





# SATHI Core Team



**Prof. Rahul Mitra, Chairman, SATHI**  
**Prof.-in-Charge, ToF-SIMS**  
**Metallurgical and Materials Engineering**



**Prof. Debabrata Pradhan,**  
**Prof.-in-Charge, HRTEM**  
**Materials Science Centre**



**Prof. Ahin Roy,**  
**Co-Prof.-in-Charge, HRTEM**  
**Materials Science Centre**



**Prof. Debalay Chakrabarti,**  
**Prof.-in-Charge, UTM**  
**Metallurgical and Materials Engineering**



**Prof. Tapas Laha,**  
**Co-Prof.-in-Charge, ToF-SIMS**  
**Metallurgical and Materials Engineering**



**Prof. Siddharth Tamang,**  
**Co-Prof.-in-Charge, UTM**  
**Mechanical Engineering**

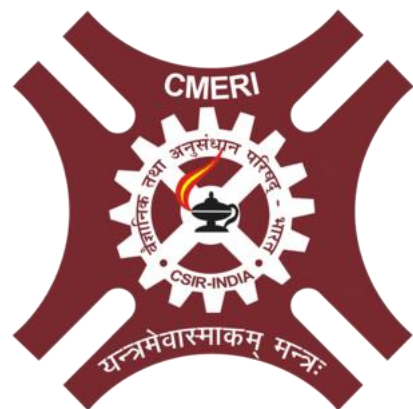




# SATHI IIT Kharagpur Footprint



## R & D Laboratory



## Industry

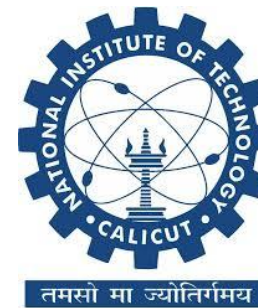
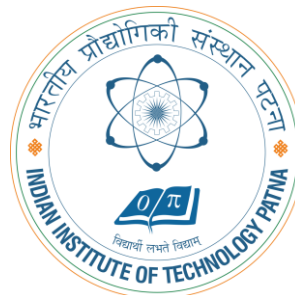




# SATHI IIT Kharagpur Footprint



## Academic Institutions



समानो मन्त्रः समितिः समानो





# Contact



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