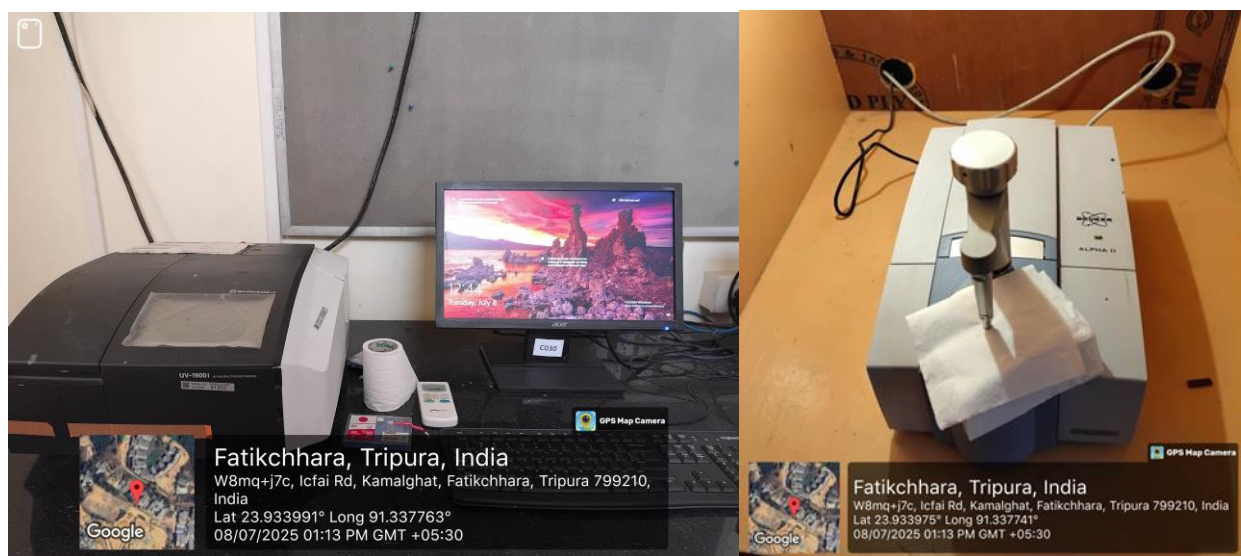


Central Instrumentation Center Annual Report for the Period of 2024-2025

The Central Instrumentation Center of ICFAI University Tripura is equipped with advanced scientific instruments, including a Shimadzu UV-visible spectrophotometer and an FT-IR Spectrometer System with ATR Sampling Module.

UV-visible spectrophotometer and FT-IR spectrometer, renowned for their precision and accuracy, are essential instruments used in chemical analysis to characterize unknown compounds prepared in the laboratory. UV-visible spectrophotometers measure the absorption of light in the ultraviolet and visible regions of the electromagnetic spectrum, providing detailed information about electronic transitions in molecules. On the other hand, FT-IR (Fourier Transform Infrared) spectrometers are used to analyze how a sample interacts with infrared light, offering valuable insights into the functional groups and chemical bonds present in the compound. These instruments, with their unparalleled accuracy, are crucial for identifying and understanding the properties of various compounds synthesized in the laboratory.



Photographs of (a) UV-visible spectrophotometer (left) and (b) FT-IR spectrometer (right)

Our efforts, involving several faculty members from the Chemistry Department, research scholars, and MSc students, have led to measurements on numerous samples. Dr. Tufan Singha Mahapatra, Dr. Subhadip Roy, Dr. Swarnali Nath Choudhury, Dr. Ganesh Chandra Paul, Dr. Prasanta Sutradhar, Dr. Saheli Roy and Dr. Ankita Chakraborty have used these two instruments during the MSc dissertation project work. Mr. Bilash Ch Roy (Guide: Dr. Tufan Singha Mahapatra) regularly uses these two instruments for his PhD research.

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These efforts are expected to yield many good publications in the near future, showcasing our shared commitment to advancing scientific knowledge.

Dr. Tufan Singha Mahapatra, Dr. Subhadip Roy, and Dr. Saheli Roy used these two instruments for the following two publications in the 2024-25 session.

(Note: Publications where these two instruments are used are given only below)

(1) Structures and magnetic properties of a trinuclear angular [Ni₃] and a heptanuclear wheel-like [Ni₇] complexes with a Schiff base ligand

T. Singha Mahapatra,* B. Roy, B. Dutta, J. Lengyel, M. Shatruk, and D. Ray*

Polyhedron, 2024, **249**, 116782–116791. (<https://doi.org/10.1016/j.poly.2023.116782>)

(2) Light-Emitting Coordination Polymers: Stimuli-Responsive Gels, PMMA-Based Composite Films and UV-Shielding

B. C. Roy, V. R. Ramlal, D. Basak, S. Basak, **Saheli Roy**, S. Ghosh, and **Tufan Singha Mahapatra***

Inorg. Chem. 2024, 63, 48, 23044–23056, <https://doi.org/10.1021/acs.inorgchem.4c04333>

(3) Dehydrogenative Coupling for Synthesis of Quinazolin-4(3H)-ones via Tandem Reaction using Ruthenium(II)-Phenyl-Azo-Naphthaldoxime: An Experimental and Theoretical Investigation

Supriyo Halder, Srijita Naskar, Debashis Jana, Gopal Kanrar, Shyama Charan Mandal, **Subhadip Roy**, Nishchal Bharadwaj, Kausikisankar Pramanik,* Sanjib Ganguly*

Chemistry – An Asian Journal, Volume20, Issue4, February 17, 2025, e202401278

<https://doi.org/10.1002/asia.202401278>

(4) Synthesis, characterization and photophysical properties of some water soluble Zn(II) azide complexes with (E)-2,4-dimethoxy-N-((pyridin-2-yl)methylene)benzenamine derived from 2-pyridinecarboxaldehyde.

Sajal Kundu, Pirkha Debbarma, **Subhadip Roy**, Lesław Sieroń, Soumitra Dinda, Waldemar Maniukiewicz

Journal of Coordination Chemistry, 78(7), 636–648.

<https://doi.org/10.1080/00958972.2025.2458644>

(5) Isostructural square planar mononuclear copper(II) and nickel(II) complexes: catecholase and phenoxazinone synthase activity, protein and DNA-binding insights, and molecular docking

B. C. Roy, E. Debbarma, D. Chakraborty, B. Dey, D. Basak, S. Ghanta, **T. Singha Mahapatra***

Polyhedron, 2025, 273, 117492, <https://doi.org/10.1016/j.poly.2025.117492>

(6) Insights into the spodium bonding characteristics of a bactericidal Hg(II) complex

A. H. Sheikh, R. B. Choudhury, V. K. Deb, T. Shahnawaz, S. Mukherjee, K. Pramanick, W. Kaminsky, N. A. Choudhury, **S. Roy**,* R. Shukla,* A. V. Gurbanov, G. Mahmoudi* and S. Adhikari, *

New J. Chem., 2025, 49, 7900-7909, <https://doi.org/10.1039/D5NJ00983A>

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Activity Details

Instrument	Details of Activity	Google Drive links to relevant documents (uses report)
Shimadzu UV-visible spectrophotometer	<p>M.Sc. students are using this machine for their practical, as well as for their dissertation work.</p> <p>PhD scholars and Chemistry department faculty use this instrument for compound characterization, catalytic studies, and kinetic studies.</p>	<p>https://drive.google.com/file/d/18UNwsMVNjWRUD95GDldGbS4BZwJ47iXc/view?usp=sharing</p>
FT-IR Spectrometer System with ATR Sampling Module	<p>M.Sc. students are using this machine for their practical, as well as for their dissertation work.</p> <p>PhD scholars and Chemistry department faculty use this instrument for compound characterization</p>	<p>https://drive.google.com/file/d/187TD8eNnhV-SwLG9u8Zo4YoBc2EQjoA2/view?usp=sharing</p>