AN ACADEMIC VISIT TO
THE
INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE (IACS)

St. Paul's Cathedral Mission College
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NAAC ACCREDITED
AISHE ID C-11869

Estd. 1865

DEPARTMENT OF CHEMISTRY

ACADEMIC YEAR : 2024-2025

INTRODUCTORY REMARK

During the study of the Undergraduate Honours course in Chemistry, students gradually become familiar with the names and working principles of various instruments which are used for the characterization purposes. They also study the importance of regulation of reaction conditions for obtaining specific reaction products. Since the undergraduate colleges are not equipped with upgraded research laboratory and the sophisticated instruments, the students remain deprived of hands-on training relevant to research. This paucity eventually creates a sizeable gap in their proper understanding regarding the "synthesis" and "characterization" process of the chemical compounds.

Therefore, I think that, it is utmost necessary for the Honours students to visit the Research institutions in order to gain an idea of the state-of-the-art research laboratory and the sophisticated instruments that are used for various characterization purposes. In an attempt to provide that opportunity to our students, we were fortunate enough to visit one of the premier research institutes of India, Indian Association for the Cultivation of Science (IACS) on 02.07.24. The students were introduced with various highly advanced spectroscopic instruments. They also visited a few ultramodern research laboratories and the unique glass-blowing unit. Unequivocally, the students were much benefited and the outlook to cultivate their subject is expected to evolve to a different dimension. The satisfied faces of the young aspirants really made our visit worthwhile.

Finally, I cordially wish every success in their future endeavours.

Dr. Jaydip Gangopadhyay
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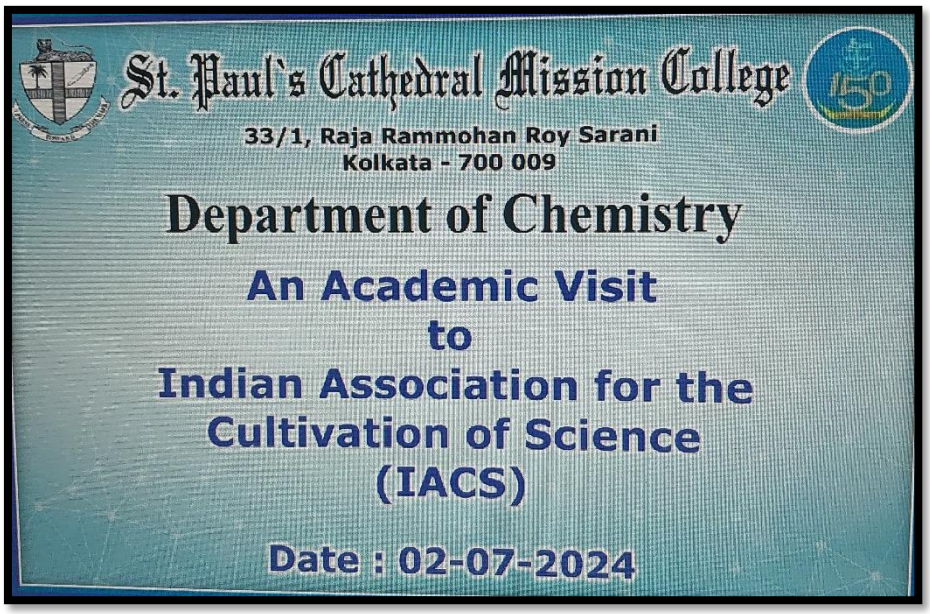
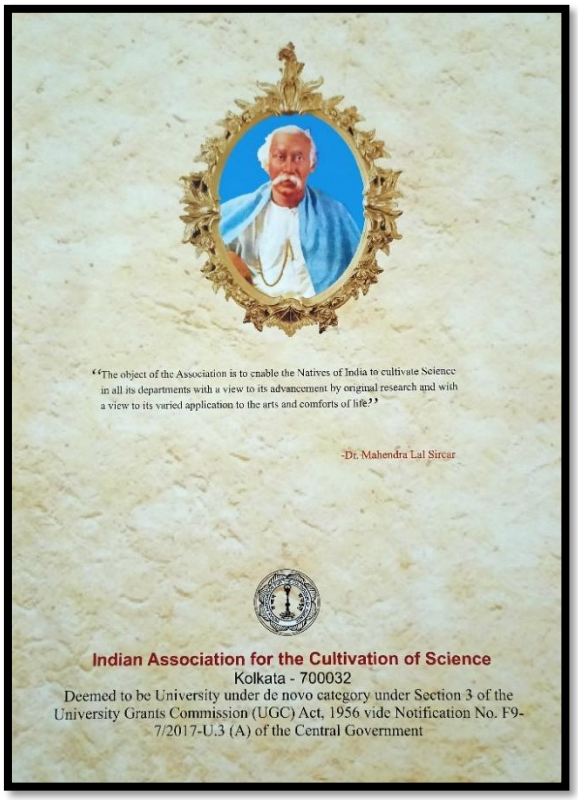
St. Paul's Cathedral Mission College
Kolkata 700009

THE BANNER



FACULTIES AND STUDENTS AT THE ENTRANCE OF THE COLLEGE WITH THE BANNER

INFORMATION BROCHURE OF IACS



"The object of the Association is to enable the Natives of India to cultivate Science in all its departments with a view to its advancement by original research and with a view to its varied application to the arts and comforts of life"

-Dr. Mahendra Lal Sircar

Indian Association for the Cultivation of Science
Kolkata - 700032
Deemed to be University under de novo category under Section 3 of the University Grants Commission (UGC) Act, 1956 vide Notification No. F9-7/2017-U.3 (A) of the Central Government

Illustrious Past

Indian Association for the Cultivation of Science (IACS) is an autonomous body under the Department of Science and Technology (DST), Government of India. Dr. Mahendra Lal Sircar, the personal physician of renowned religious leader Sri Ramakrishna Paramhansa, founded IACS at Bowbazar in the year 1876. Thus IACS is the oldest scientific research institution not only in India but also in Asia.

In the first 50 years that overlapped with Bengal Renaissance, IACS was run by public donations and endowments from benefactors like Pandit Iswar Chandra Vidyasagar, Maharaj of Vizianagram, Maharaja of Cooch-Behar, Kali Kissen Tagore and others. In the initial period, Father Lafonte in collaboration with Dr. Sircar took major steps, in building the institute. Sir J. C. Bose, FRS (1858-1937) inventor of microwave/radio communication) and Sir Asutosh Mookherjee (1864-1924, first Indian to publish a scientific paper in 1881) were among very first lecturers of the Association.

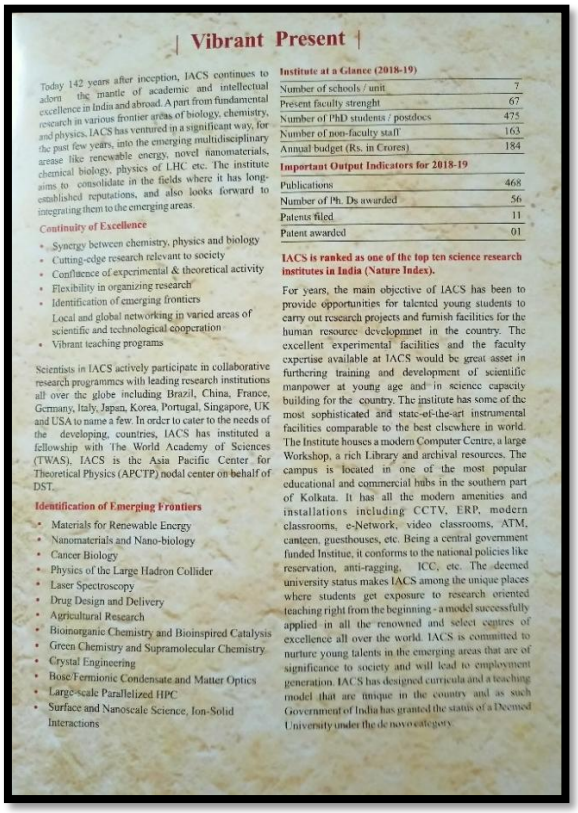
Original research at the Association started in 1907 by Sir C. V. Raman. Raman was a Palit Professor of Physics of Calcutta University from 1917-33 but he carried out all his research at IACS. He made the historic discovery of 'Raman Effect' at IACS, for which he received the Nobel Prize in Science, the only one from India till date and the first one from Asia.

In 1933, Raman departed Calcutta to join IISc, Bangalore as its first Indian Director. Before leaving Calcutta, he appointed K.S. Krishnan, FRS (1898-1961, codiscoverer of Raman Effect) as the first Mahendra Lal Sircar Professor. During this juncture, renowned nationalist Syamia Prisad Mookerjee, also one of the trustee members who had intense involvement in the Swadeshi movement, made significant contribution in maintaining the high standard of IACS.

Since 1926, Government started funding the Association. After Independence, M. N. Saha, FRS (1893-1956, discoverer of Saha Ionization Formula) and the first official Director of IACS (1953-1956) Played pivotal roles in making IACS a full-fledged research institute with funding from the Government of India. With the help of the government, he successfully implemented shifting the institute from Bowbazar to the present campus at Jadavpur. He envisaged the creation of an active research school for continuing with fundamental studies in X-rays, Optics, Magnetism, and Raman Effect in the early years, all of which find great relevance in modern science research and technology even today. S. N. Bose, FRS (1894-1974) (discoverer of the Bose-Einstein Statistics) joined IACS as a National Professor in 1958 and held that position till his death in 1974.

The glorious history of IACS spans the pioneering achievements of many other renowned scientists like K. Banerjee (direct method in crystallography), A. K. Raychaudhuri (Raychaudhuri equation), S. Basu (quantum mechanics), P. C. Dutta (organic synthesis) P. Ray (magnetochemistry), S. R. Palit (polymer science) and a host of many other luminaries, who all contributed to the great heritage not only of IACS but of science at large.

With the strong socio-economic factors driving the students and their parents towards some assured and secure future, the issue of motivating the best and brightest of the school students to pursue a career in science is of enormous importance. In this mission, IACS has successfully kept its tradition alive, yet tried to redress this societal aspect of the community.



Vibrant Present

Today 142 years after inception, IACS continues to adorn the mantle of academic and intellectual excellence in India and abroad. A part from fundamental research in various frontier areas of biology, chemistry, and physics, IACS has ventured in a significant way, for the past few years, into the emerging multidisciplinary areas like renewable energy, novel nanomaterials, chemical biology, physics of LHC etc. The institute aims to consolidate in the fields where it has long-established reputations, and also looks forward to integrating them to the emerging areas.

Continuity of Excellence

- Synergy between chemistry, physics and biology
- Cutting-edge research relevant to society
- Confluence of experimental & theoretical activity
- Flexibility in organizing research
- Identification of emerging frontiers
  Local and global networking in varied areas of scientific and technological cooperation
- Vibrant teaching programs

Scientists in IACS actively participate in collaborative research programmes with leading research institutions all over the globe including Brazil, China, France, Germany, Italy, Japan, Korea, Portugal, Singapore, UK and USA to name a few. In order to cater to the needs of the developing countries, IACS has instituted a fellowship with The World Academy of Sciences (TWAS). IACS is the Asia Pacific Center for Theoretical Physics (APCTP) nodal center on behalf of DST.

Identification of Emerging Frontiers

- Materials for Renewable Energy
- Nanomaterials and Nano-biology
- Cancer Biology
- Physics of the Large Hadron Collider
- Laser Spectroscopy
- Drug Design and Delivery
- Agricultural Research
- Bioinorganic Chemistry and Bioinspired Catalysis
- Green Chemistry and Supramolecular Chemistry
- Crystal Engineering
- Bose Fermionic Condensate and Matter Optics
- Large-scale Parallelized HPC
- Surface and Nanoscale Science, Ion-Solid Interactions

Institute at a Glance (2018-19)

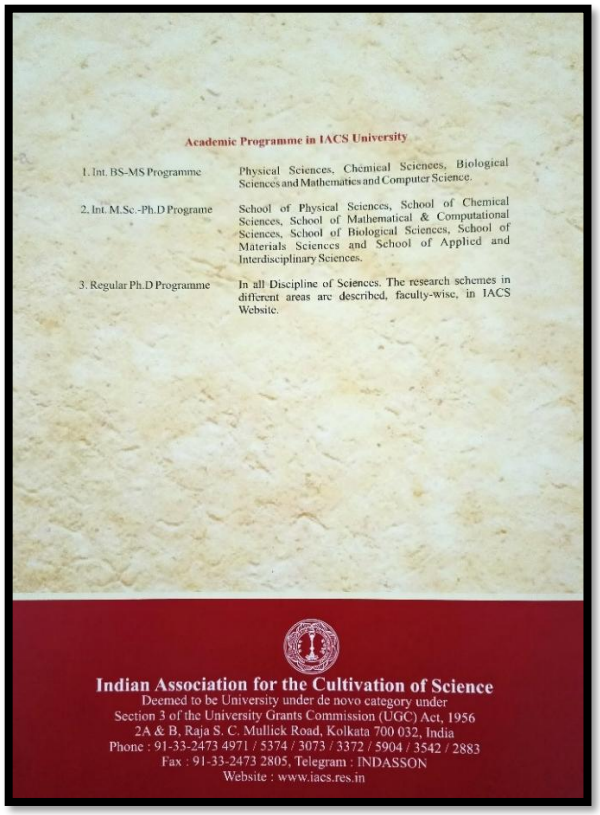
Number of schools / unit	7
Present faculty strenght	67
Number of PhD students / postdocs	475
Number of non-faculty staff	163
Annual budget (Rs. in Crores)	184

Important Output Indicators for 2018-19

Publications	468
Number of Ph. Ds awarded	56
Patents filed	11
Patent awarded	01

IACS is ranked as one of the top ten science research institutes in India (Nature Index).

For years, the main objective of IACS has been to provide opportunities for talented young students to carry out research projects and furnish facilities for the human resource development in the country. The excellent experimental facilities and the faculty expertise available at IACS would be great asset in furthering training and development of scientific manpower at young age and in science capacity building for the country. The institute has some of the most sophisticated and state-of-the-art instrumental facilities comparable to the best elsewhere in world. The Institute houses a modern Computer Centre, a large Workshop, a rich Library and archival resources. The campus is located in one of the most popular educational and commercial hubs in the southern part of Kolkata. It has all the modern amenities and installations including CCTV, ERP, modern classrooms, e-Network, video classrooms, ATM, canteen, guesthouses, etc. Being a central government funded Institue, it conforms to the national policies like reservation, anti-ragging, ICC, etc. The deemed university status makes IACS among the unique places where students get exposure to research oriented teaching right from the beginning - a model successfully applied in all the renowned and select centres of excellence all over the world. IACS is committed to nurture young talents in the emerging areas that are of significance to society and will lead to employment generation. IACS has designed curricula and a teaching model that are unique in the country and as such Government of India has granted the status of a Deemed University under the de novo category.



Academic Programme in IACS University

1. Int. BS-MS Programme	Physical Sciences, Chemical Sciences, Biological Sciences and Mathematics and Computer Science.
2. Int. M.Sc.-Ph.D Programe	School of Physical Sciences, School of Chemical Sciences, School of Mathematical & Computational Sciences, School of Biological Sciences, School of Materials Sciences and School of Applied and Interdisciplinary Sciences.
3. Regular Ph.D Programme	In all Discipline of Sciences. The research schemes in different areas are described, faculty-wise, in IACS Website.

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Fax : 91-33-2473 2805, Telegram : INDASSON
Website : www.iacs.res.in

SOME GLIMPSES OF THE VISIT

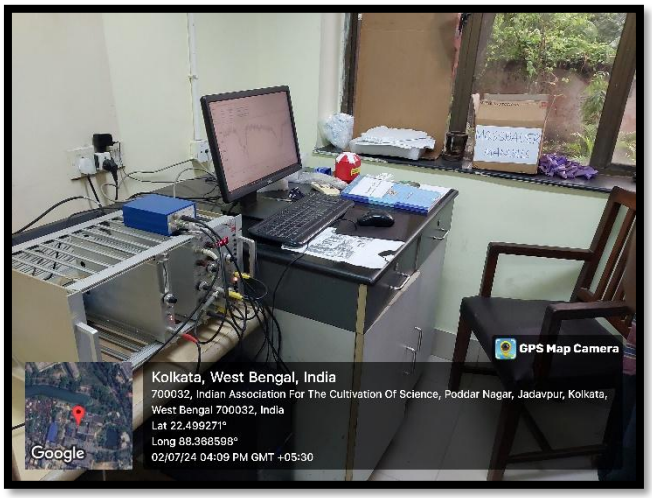
INSIDE THE C.V. RAMAN LECTURE HALL

THE LIQUID NITROGEN PLANT

INSIDE A LAB OF IACS

ELECTROCHEMICAL SETUP OF CYCLIC VOLTAMMETRY

ARBITRARY FUNCTION GENERATOR OF PHOTOLUMINISCENCE SPECTROMETER

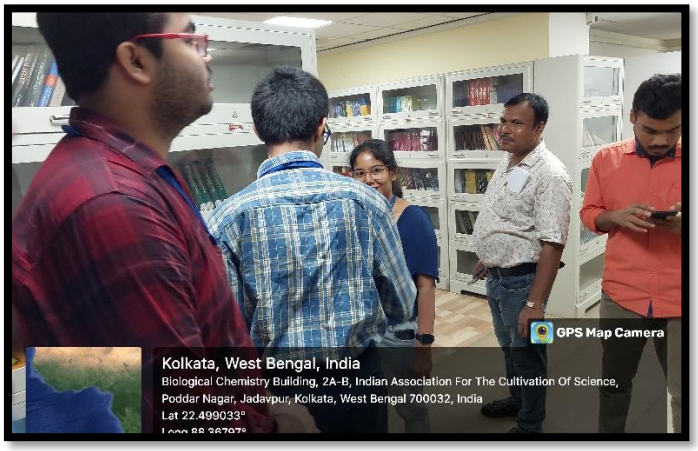


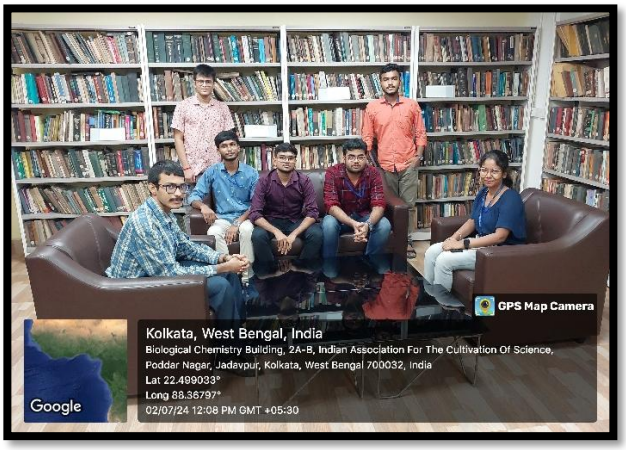
INSTRUMENTATION OF MÖSSBAUER SPECTROSCOPY INSIDE A RESEARCH LAB OF IACS

IN THE GLASSBLOWING SECTION

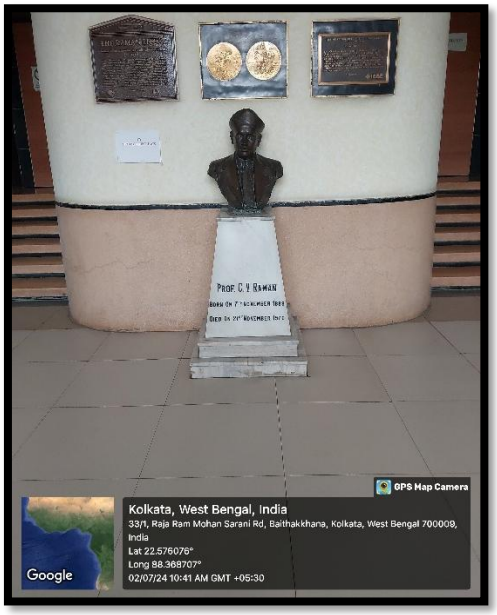
REFRESHMENT

VIDEO SESSION OF RAMAN EFFECT

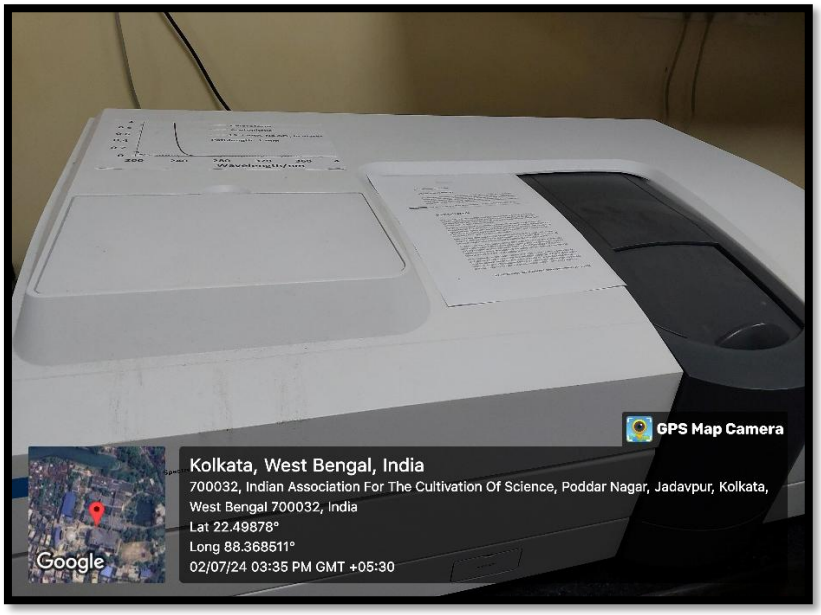




IN THE LIBRARY OF IACS

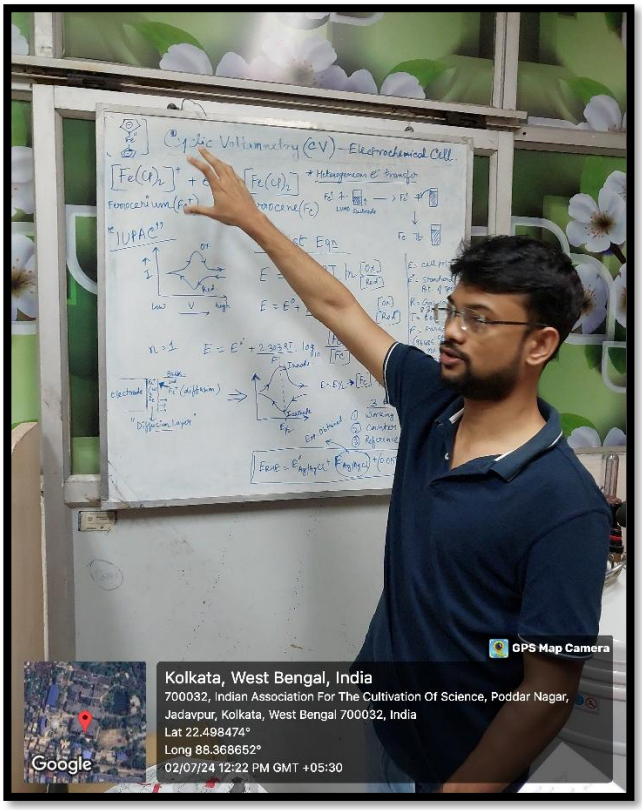


THE BUST OF PROF. C. V. RAMAN

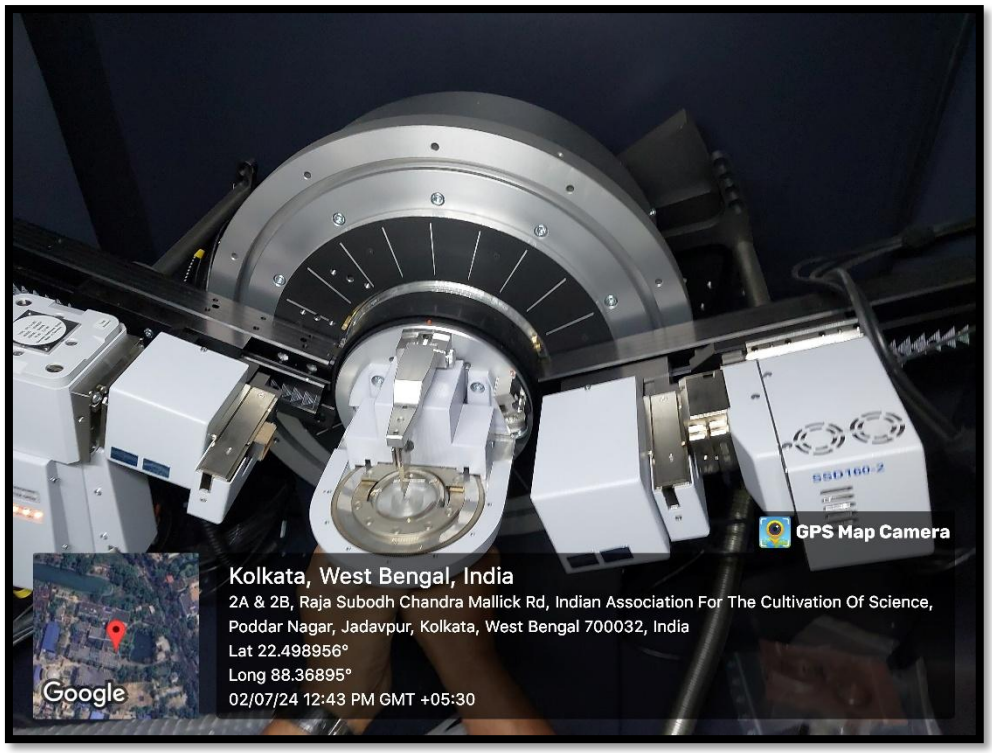


UV-VIS SPECTROMETER

400 MHz NMR SETUP



A PhD SCHOLAR EXPLAINING THE BASICS OF CYCLIC VOLTAMMETRY



SINGLE CRYSTAL XRD

ARCHIVE SECTION OF IACS