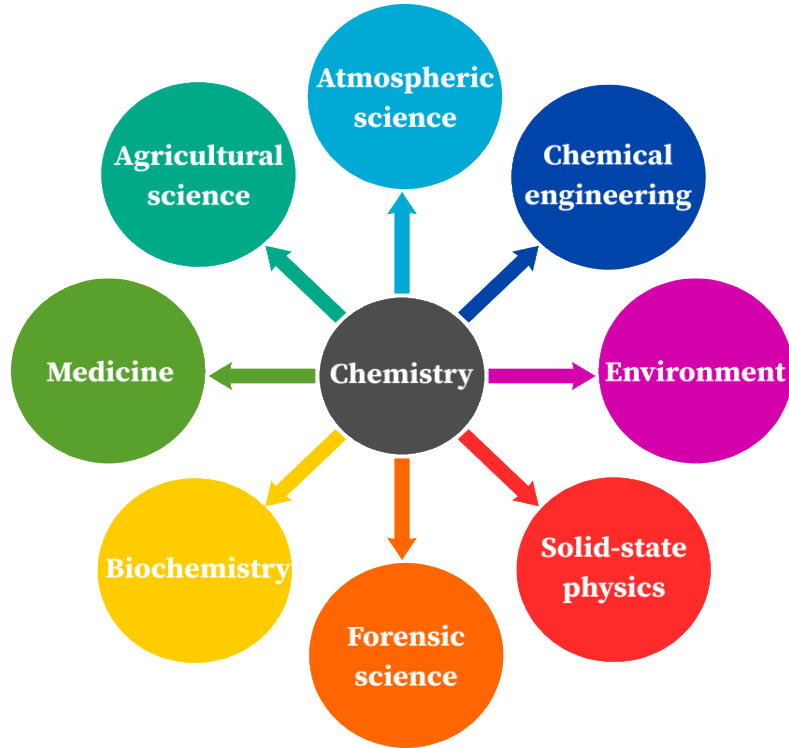




Department of Chemistry

Profile

CHEMISTRY



- Chemistry is all around us and is involved in everything we do, need and interact within our everyday lives!
- Considered as mother of all Sciences and core of research, chemistry is essential to understand basic concepts and applications in various fields
- Challenging and fascinating area of research and technology

Our Vision

“A well rounded education of International standards”

- To promote, inspire and nurture the fundamentals of chemistry through UG and PG courses
- High emphasis on concept-theory-practical training to build up research interest for the transformation of budding chemists into productive scientists, excellent teachers, entrepreneurs and innovative independent researchers
- Advanced syllabus considering present day challenges and skill development
- All Courses executed by well qualified and experienced teachers active in research and holistic development of students
- Strengthening of newly formed PG Program

PROGRAMS OFFERED

UG Program

B.Sc. Chemistry

PG Program

M.Sc. Chemistry
(By Papers)

- Physical Chemistry
- Inorganic Chemistry
- Organic Chemistry

M.Sc. Chemistry
(By Research)

- Analytical Chemistry

Departmental Profile-Details of faculty

NAME	QUALIFICATION	DESIGNATION	EXPERIENCE (YRS)	RECOGNISED FOR
Dr. Brijesh Singh (Head of department)	M.Sc, Ph.D	Associate professor	27	M.Sc. (papers, research); Ph.D.
Dr. Shipra Biswas	M.Sc, B.Ed, M.Phil, Ph.D	Assistant Professor	20	M.Sc. (papers); Ph.D.
Dr. Sreela Dasgupta	B.Sc(Hons), M.Sc, B.Ed, Ph.D.	Associate professor	19	M.Sc. (papers); Ph.D.
Dr. Sangeeta Parab	M.Sc, B.Ed, Ph.D.	Associate professor	17	M.Sc. (papers, research); Ph.D.
Dr. Supriya Deshmukh	M.Sc, Ph.D.	Assistant Professor	16	M.Sc. (papers)
Dr. Sajith Chandran	M.Sc, Ph.D.	Assistant Professor	10	M.Sc. (papers)
Mr. Gokul Ganesan	M.Sc, NET	Assistant Professor	09	M.Sc. (papers)
Dr. Shilpa Jain	B.Sc(Hons), M.Sc, NET, Ph.D.	Assistant Professor	04	
Ms. Khatija Atthar	M.Sc	Assistant Professor	06	
Ms. Aksh Hina Shaikh	M.Sc, SET	Assistant Professors	01	
Mr. Onkar Lotlikar	M.Sc, NET, SET	Assistant Professor	01	

Student : Faculty Ratio = 38.8 : 1

Highlights of the Dept.

Innovative Teaching-Learning

- Edmodo
- Moodle
- Google Suite (Classroom, Meet, Docs, Forms etc.)
- Creative evaluation (crossword, video)
- Zoom, Prezi

Research

- Funded Research projects
- Internships
- UG & PG projects (Avishkar, Explore)
- Faculty active in research
- Publications

Chemical Society

- Chem-Crossword
- Quizes
- Workshops
- Seminar
- Internships
- Lecture Series

Industrial / Lab visits

- SAIF (IIT Bombay)
- Nanoscience Center (MU)
- Anchrome Ltd.
- IRMRA
- Directorate of Forensic Sciences
- ICT-Matunga

**DEPARTMENT
Funded by
DBT- STAR**

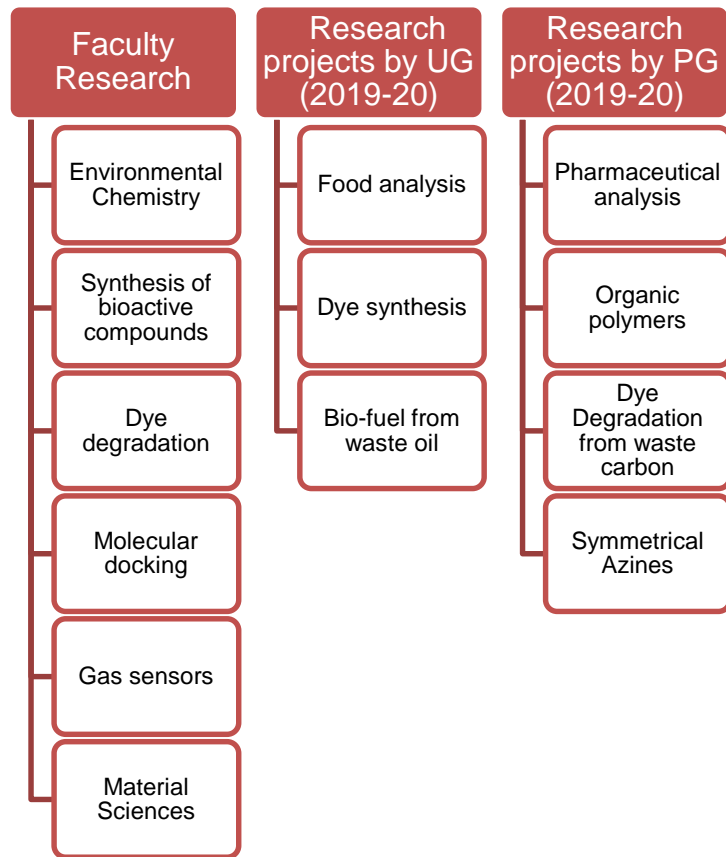
Creative Learning & Evaluation Techniques Used in UG(2019-20)

- Fy Bsc (video & ICT based learning)
- Sy BSc (SEM III) (Video making)
- Sy BSc (SEM IV) (multiple modules)
- ICT based Teaching
- Innovative assessment
- Interactive application based learning

Creative learning and evaluation technique used in PG (2019-20)

- Objective based assessment on MOODLE
- Use of SWAYAM-NPTEL platform for several topics (stereochemistry etc.)
- Introduced Microsoft EXCEL & other softwares
- Interactive application based learning
- ICT based Teaching

Departmental Research Activities



Research publication by faculty in international peer-reviewed journals (2019-20)

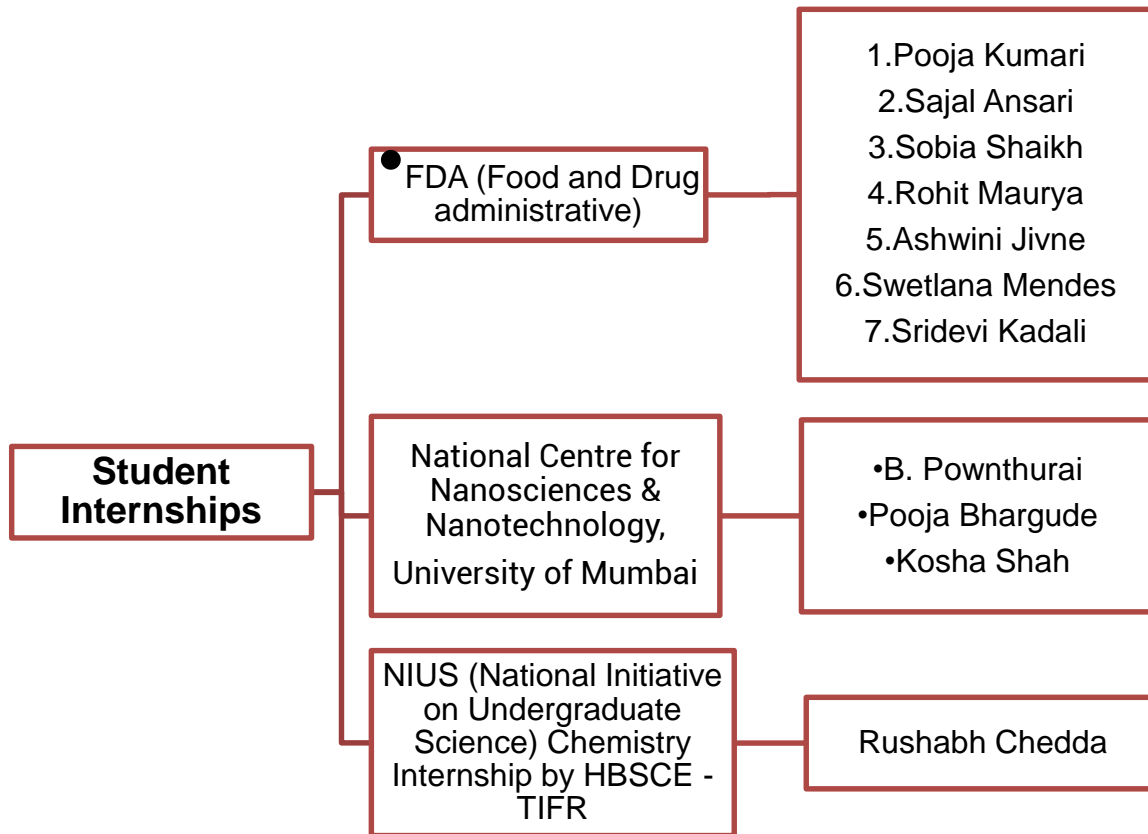
- Materials Science & Engineering B, Elsevier
- Journal of Industrial & Engineering Chemistry, Elsevier
- Synthetic Communications, Taylor & Francis
- International Journal of Life Sciences Research
- International Journal of Innovative Science and Research Technology

BCUD Minor Research Proj.(Mr. Gokul Ganesan, 2019-20)

Workshops Organized:

- Gen Next Mass Spectrometers (23rd Jan 2019)
- Practicing Science: Global Perspective (26th-27th April 2019)
- Career Guidance Lectures
- Workshop on HPLC & DSC
- Workshop on IYPT(International year of periodic table)

Student Internships (PG, 2019-20)



International Research Publications by Students (During internships)

Tetrahedron Letters 60 (2019) 891–894

Contents lists available at ScienceDirect

Tetrahedron Letters

journal homepage: www.elsevier.com/locate/tetlet



Transition metal-catalyzed C–H functionalization of arylacetic acids for the synthesis of benzothiadiazine 1,1-dioxides

Bhausaheb N. Patil^{1,2,3}, Jatin J. Lade^{2,3}, Aniket S. Karpe², B. Powthurai², Kamlesh S. Vadagaonkar^{2,4}, V. Mohanasrinivasan², Atul C. Chaskar^{2,4*}

¹National Centre for Nanosciences and Nanotechnology, University of Mumbai, Vidyanagar, Mumbai 400086, Maharashtra, India
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³Department of Biomedical Sciences, Vellore Institute of Technology, 632014, Tamil Nadu, India

ARTICLE INFO

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 Available online 26 February 2019

Keywords:
 Arylacetic acids
 Benzothiadiazine 1,1-dioxides
 C–H functionalization
 Transition metal-catalyzed

ABSTRACT

Copper-catalyzed practical route for the synthesis of benzothiadiazine 1,1-dioxides has been developed. The method involves C–H functionalization of arylacetic acids to form arimatic aldehydes and their subsequent condensation with 2-aminobenzonitrile/isoamide. This functional group tolerant approach furnished benzothiadiazine 1,1-dioxide derivatives in good to excellent yields. Broad substrate scope, inexpensive catalyst and high product yields are notable features of this protocol.

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SYNTHETIC COMMUNICATIONS[®]

https://doi.org/10.1080/00397911.2019.1600193



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Highly adequate oxidative esterification of α -carbonyl aldehydes with alkyl halides in TBAI/TBHP mediated system

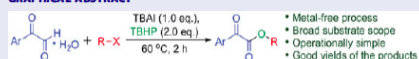
Pooja L. Bhargude^{1*}, Jatin J. Lade^{1*}, Bhausaheb N. Patil¹, Kamlesh S. Vadagaonkar², and Atul C. Chaskar^{1,3}

¹National Centre for Nanosciences and Nanotechnology, University of Mumbai, Mumbai, India;
²Department of Dyestuff Technology, Institute of Chemical Technology, Mumbai, India

ABSTRACT

An efficient and viable synthesis of α -ketoesters from alkyl halides and α -carbonyl aldehydes has been reported under metal-free conditions. The present method involves oxidative esterification of α -carbonyl aldehydes with alkyl halide using TBAI as a promoter and TBHP as an oxidant to form α -ketoesters in good to excellent yields with versatile structural diversity. Use of commercially accessible and inexpensive substrates, broad substrate scope and good functional group tolerance are the key features of this protocol.

GRAPHICAL ABSTRACT



ARTICLE HISTORY

Received 5 March 2019

KEYWORDS

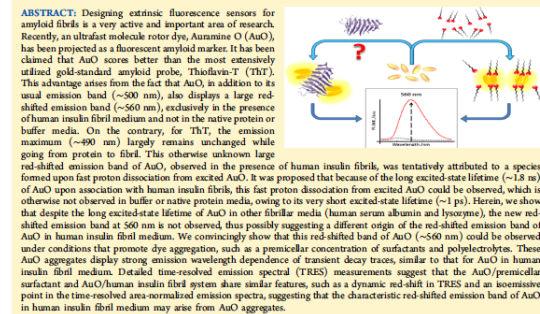
α -Ketoester; metal-free synthesis; oxidative esterification; TBHP; α -carbonyl aldehyde

On the Molecular Form of Amyloid Marker, Auramine O, in Human Insulin Fibrils

Niyati H. Mudliar,¹ Aafim M. Pettwala,¹ Ankur A. Awasthi,² and Prabhat K. Singh^{1*}

Radiation & Photochemistry Division, Bhabha Atomic Research Centre, Mumbai-400 085, India

Supporting Information



ABSTRACT: Designing extrinsic fluorescence sensors for amyloid fibrils is a very active and important area of research. Recently, an ultrafast molecule rotor dye, Auramine O (AuO), has been projected as a fluorescent amyloid marker. It has been claimed that AuO scores better than the most extensively utilized gold-standard amyloid probe, Thioflavin T (ThT). This advantage arises from the fact that AuO, in addition to its usual emission band (~500 nm), also displays a large red-shifted emission band (~560 nm), exclusively in the presence of human insulin fibril medium and not in the native protein or buffer media. On the contrary, for ThT, the emission maximum (~490 nm) largely remains unchanged while going from protein to fibril. This otherwise unknown large red-shifted emission band of AuO, observed in the presence of human insulin fibrils, was tentatively attributed to a species formed upon fast proton dissociation from excited AuO. It was proposed that because of the long excited-state lifetime (~1.8 ns) of AuO upon association with human insulin fibrils, this fast proton dissociation from excited AuO could be observed, which is otherwise not observed in buffer or native protein media, owing to its very short excited-state lifetime (~1 ps). Herein, we show that despite the long excited-state lifetime of AuO in other fibrillar media (human serum albumin and lysozyme), the new red-shifted emission band at 560 nm is not observed, thus possibly suggesting a different origin of the red-shifted emission band of AuO in human insulin fibril medium. We convincingly show that this red-shifted band of AuO (~560 nm) could be observed under conditions that promote dye aggregation, such as a premolar concentration of surfactants and polyelectrolytes. These AuO aggregates display strong emission wavelength-dependence of transient decay traces, similar to that for AuO in human insulin fibril medium. Detailed time-resolved emission spectral (TRES) measurements suggest that the AuO/premicellar surfactant and AuO/human insulin fibril system share similar features, such as a dynamic red-shift in TRES and an isosmestic point in the time-resolved area-normalized emission spectra, suggesting that the characteristic red-shifted emission band of AuO in human insulin fibril medium may arise from AuO aggregates.

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CHEMPHYSICHEM

OF CHEMICAL PHYSICS AND PHYSICAL CHEMISTRY

Accepted Article

Title: Proton Transfer Reaction Dynamics of Pyranine in DMSO-Water Mixture

Authors: Prabhat Kumar Singh and Ankur Awasthi

This manuscript has been accepted after peer review and appears as an Accepted Article online prior to editing, proofing, and formal publication of the final Version of Record (VoR). This work is currently citable by using the Digital Object Identifier (DOI) given below. The VoR will be published online in Early View as soon as possible and may be different to this Accepted Article as a result of editing. Readers should obtain the VoR from the journal website shown below when it is published to ensure accuracy of information. The authors are responsible for the content of this Accepted Article.

To be cited as: ChemPhysChem 10.1002/cphc.201701133

Instrumentation Facilities



Rotary Evaporator

**Funded by
DST- FIST & DBT- STAR**



HPLC



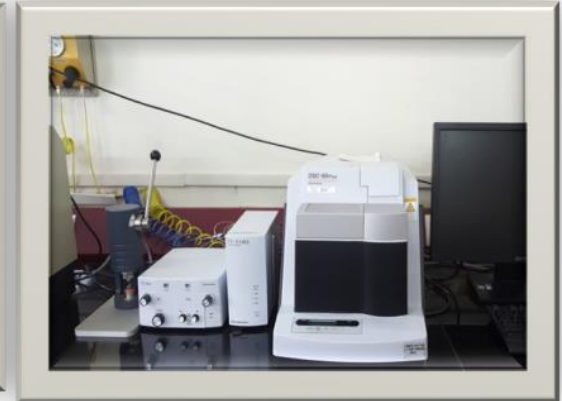
IR- Spectrophotometer



Ultracentrifuge



Gel-Documentation



DSC

Workshop Organized (2019-20)

International year of Periodic Table 2019 (IYPT)



**Practicing
Science**



**Career
Guidance
Lectures**



**Workshop on
HPLC & DSC**



Industrial/Lab Visits (2019-20)

SAIF – IIT Bombay
Anchrom Ltd.

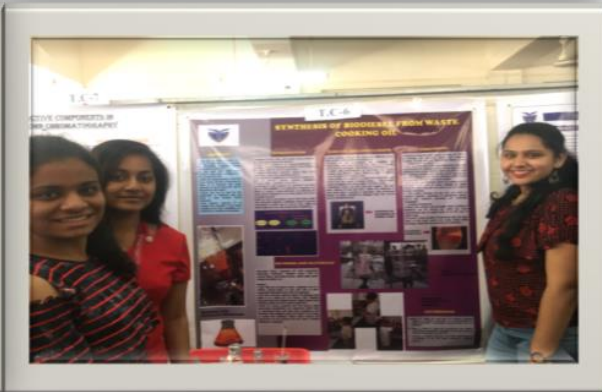
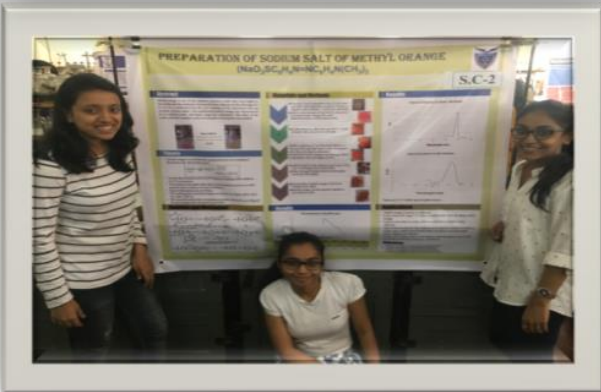
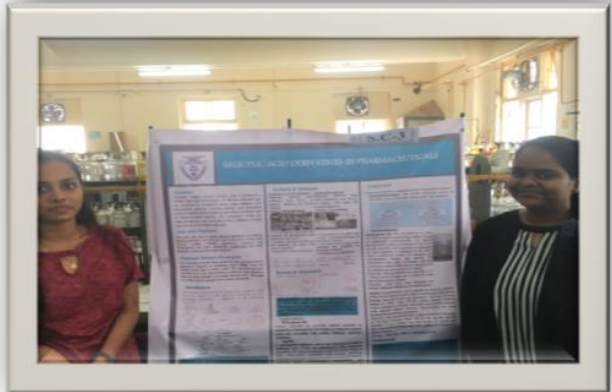
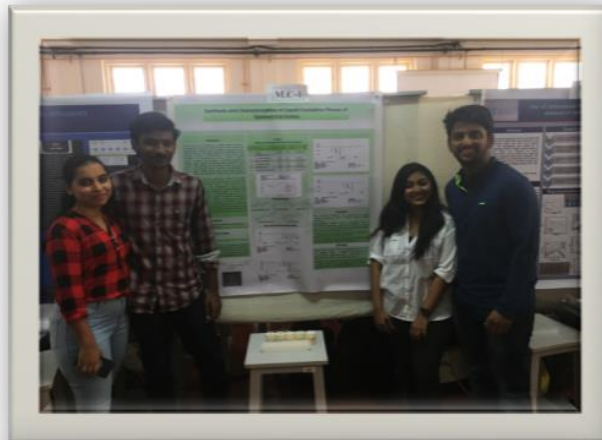
IRMRA



Directorate of Forensic Sciences



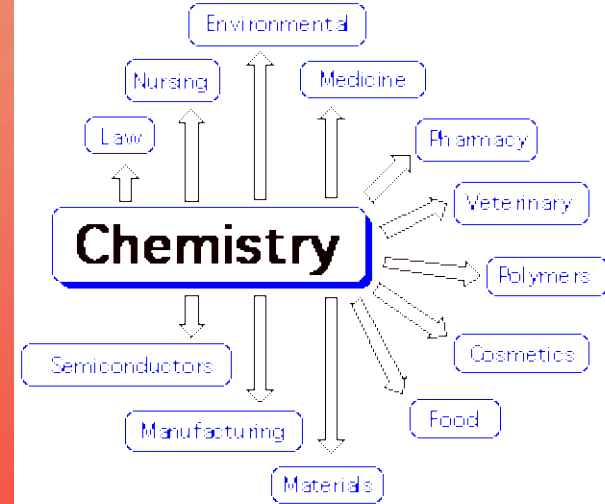
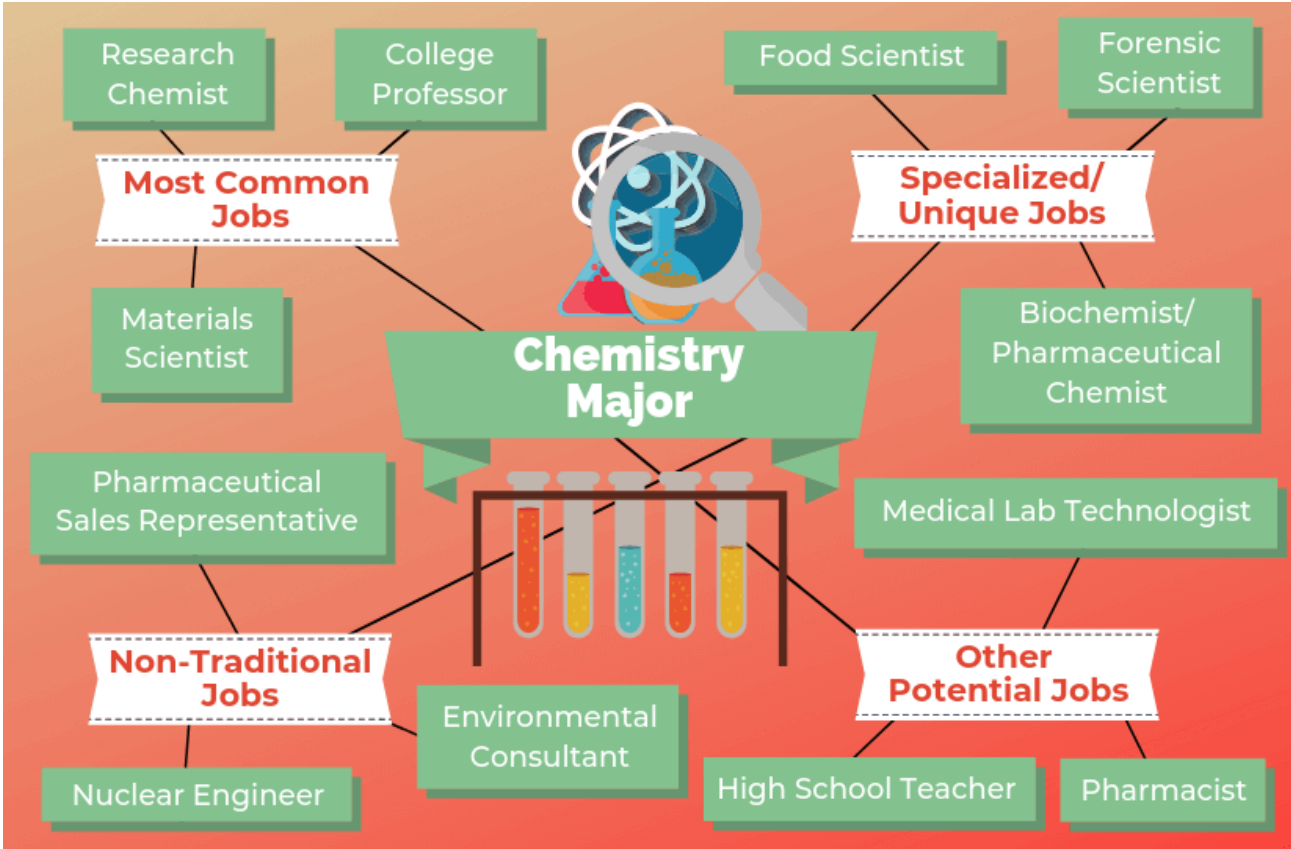
Explore-2019



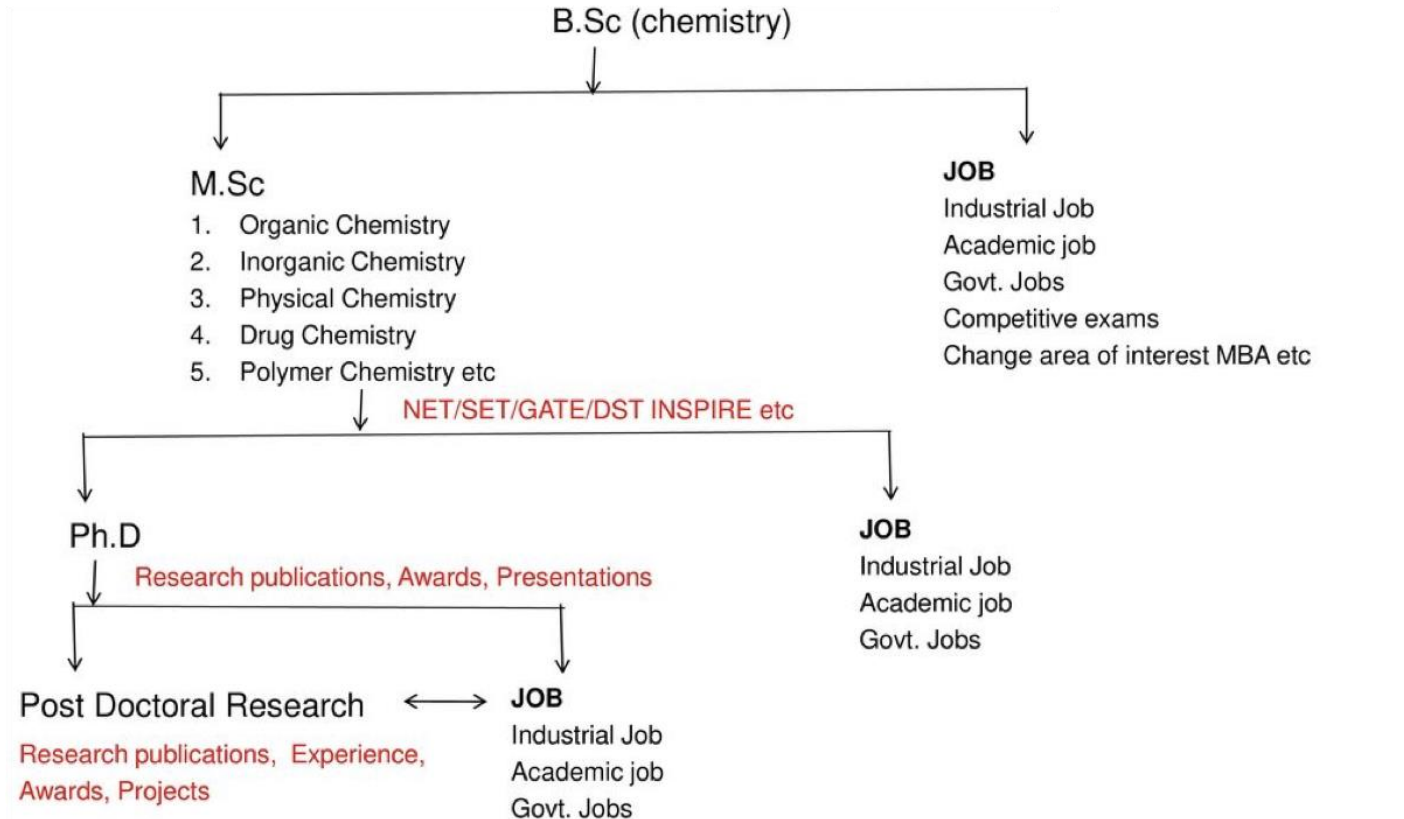
Intercollegiate Participation (2019-20)



Career in Chemistry



Future Prospects:



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