

OPENING DOORWAYS THROUGH INDUSTRIAL CHEMISTRY

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ABSTRACT:

Industrial chemistry plays an important role in our society by improving the living standards of billions of people by its products, applications and benefits. It is to be taken into consideration that the important obligation of manufacturers and scientists is to convince people that chemicals can solve their current problems while adapting to the changing resources, methodologies, chemicals, technologies etc.. in a competitive economy with different types of industrial requirements. This is made sure by concerned Institutes by providing adequate research and educational infrastructures and by supplying 90,000 Masters, 6000 Ph.D. holders in the field of chemistry each year in India. These highly trained and skilled professionals are recruited in Petrochemical Companies, Research Organizations, Agrochemical Companies, Polymer Companies, Pharmaceuticals areas etc.. which are different branches in the field of Industrial Chemistry with average salary ranging between INR 1-10 lakhs as per their experience, expertise and field.

We aim to shed light on the educational courses offered in the field of Industrial Chemistry and the job opportunities provided to the aspirants of this fields which serve as doorways towards a better life ensuring positive impact on the society.

KEYWORDS: Industrial chemistry, improving, living standards, applications, job opportunities.

INTRODUCTION:

Chemistry is literally embedded within the fabric of reality and yet it seems so inconspicuous to the ignorant minds, but trust me chemistry and its branches are one of the most essential elements of this world. So much so that we can harness its significance to build our career and not just earn a living but also improve the living standards of others around us.

One such branch of chemistry is the Industrial Chemistry which plays an important role in our society by its amazing products which have lucrative applications. Chemical industries' role as the key enabler of economic growth is well established worldwide. From the ubiquitous cellphones to solar panels providing Carbon free energy, to LED lights providing efficient lighting all made possible by chemical industry products which are nothing but the ideas of the Industrial chemistry materialized into real life objects and thus Industrial chemistry also keeps track of the status quo of the competitive world and the economy and also tries to bridge the gap between the ideas that academia generates and the ideas that the product developing industries seeks and evaluates by offering educational courses like B.Sc and M.Sc in Industrial Chemistry.

Here we talk about Industrial chemistry courses and how it can be propagated on a global scale as a higher education if the universities offering courses in the field of Industrial chemistry enroll themselves in the 'Association of Indian Universities' and avail the lucrative schemes of 'Higher Education Sector' like 'Rashtriya Uchchatar Shiksha Abhiyan (RUSA)', and also avail the extravagance offered by statutory organization like University Grant Commission, and prove their mettle during NAAC assessment and thus meet the academic and infrastructural requirements of its students and teachers. This way the field of Industrial Chemistry can be taken to a higher level in the field of higher Education and lives of people involved in the academics of this field and also the human society can be improved.

Furthermore this paper is also furnished with some information about The Higher Education Sector of India, UGC, NAAC, RUSA, IUC and Scholarship programs like C.V. Raman Scholarship by Department of Collegiate Education, Karnataka; Vidyasiri Scholarship by Karnataka State Government and Vidyasaarathi scholarship by NSDL e-Gov and also the topics- Virtual Interactive classes, library facilities and Internship opportunities are mentioned.

THE HIGHER EDUCATION SECTOR: (Universities and Higher Education)

Higher Education sector has witnessed a tremendous increase in the number of Universities/university levels, institutions and colleges since independence. The number of Universities has increased 34 times from 20 in 1950 to 677 in 2014. The sector boasts of 45 Central Universities of which 40 are under the purview of Ministry of Human Resource Development, 318 State Universities, 185 State Private Universities, 129 Deemed to be Universities, 51 Institutions of National Importance (established under the Act of Parliament) under MHRD (IITs- 16, NITs – 30 and IISERs – 5) and 4 Institutions (established under various State legislations). The number of colleges has also registered manifold increase of 74 times with just 500 in 1950 growing to 37,204 as on 31st March 2013.

The quantum growth in the Higher Education sector is spear-headed by Universities which are the highest seats of learning established by Central Act or State Act or Provincial Act recognized by the University Grants Commission (UGC) in accordance with the regulations made in this regard under the UGC Act , 1956.

UNIVERSITY GRANTS COMMISSION (UGC):

It is a statutory organization established by an Act of Parliament in 1956. It was established so that it can cater to the co-ordination, determination and maintenance of standards of university education. Apart from providing grants to eligible universities and colleges, the commission also advises the Central and the State Governments on measures which are necessary for the development of Higher Education. It functions from New Delhi as well as its 6 regional offices located in Bangalore, Bhopal , Guwahati , Hyderabad , Kolkata and Pune.

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC):

NAAC is an autonomous body established by UGC in 1994. Its primary mandate is to assess and accredit institutions of Higher Learning, Universities and Colleges, based on these 7 criteria:

- i) Curricular aspects
- ii) Teaching-learning and evaluation
- iii) Infrastructure and learning resources
- iv) Research , consultancy and extension
- v) Student support and progression
- vi) Governance and leadership
- vii) Innovative practices as basis for its assessment procedure.

It functions through its General Council and Executive committee and assesses and accredits institutions under grades A, B, C (if accredited) and D (if not accredited).

RASHTRIYA UCHCHATTAR SHIKSHA ABHIYAN (RUSA):

RUSA is a centrally sponsored scheme which provides strategic funding to eligible state Higher Education institution by Upgrading colleges to universities, providing faculty recruitments and improvements, vocalization of Higher Education, Research, innovation & quality improvement, Capacity building, preparation data collection & planning and Institutional restructuring & reforms which are some of its primary targets.

INTER UNIVERSITY CENTERS (IUC):

IUCs are autonomous centers established by UGC, under UGC Act Clause 12(ccc). The objectives of IUC are mentioned below :

- i) To provide common advanced centralized facilities for universities with poor infrastructure.
- ii) Provide expertise to teachers and researchers (also across countries).
- iii) Provide access to state-of-the-art equipments, libraries etc..

With these many organizations willing to help Universities, Colleges and other institutes which also includes institutes which offer B.Sc and M.Sc degree in Industrial Chemistry, it is safe for us to surmise that Industrial Chemistry in the field of Higher Education can indeed go global, offering jobs to numerous students who have completed their Bachelors and Masters in Industrial Chemistry. Given below are some of the Institutes offering courses in Industrial Chemistry and their course fees in INR (only few universities have been mentioned further in Table 1). Admissions in these reputed Universities require the enrolling candidates to crack entrance exams like IIT JAM, OUCET, CUCET, JUCET, LPU NEST and study materials and coaching centers are also available along with online tutorial videos and interactive sessions which cover the topics included in the syllabus of these Entrance exams.

(Table1)

College name	City	Average annual fee in INR
Central University of Gujarat	Gujarat	INR 4,800
Alagappa University	Karaikudi	INR 7,000
Government Arts and Science College	Karnataka	INR 7,500
Gulbarga University	Gulbarga	INR 12,800
Bhavnagar University	Bhavnagar	INR 25,000
Kuvempu University	Shimoga	INR 28,800
M.S. Ramaiah University Of Applied Science	Bangalore	INR 40,000
Dr. C.V. Raman University	Bilaspur	INR 51,500

And much more....(Institutes that can avail extravagance provided by The Higher Education Sectors, RUSA, NAAC,UGC etc..). Students graduated from Institutes like those mentioned above can work as Professionals in major positions like Taxonomist, Chemist, Synthetic Chemist, Scientists, Quality Assurance Officers, Bio-chemistry Assistant Scientist, Chemistry Content writer etc...with average salary of INR 1-10 lacs (mentioned in Table 2).

(Table2)

Profession	Average salary in INR
Laboratory Assistant	1,00,000-3,00,000
Chemist	2,00,000-3,00,000
Pharmacist	2,00,000-3,00,000
Research Associate	3,00,000-4,00,000
Taxonomist	7,00,000-8,00,000

There are other scholarship programs as well besides the schemes provided by The Higher Education Sector which are mentioned in the following paragraph.

C.V. Raman scholarship by Department of Collegiate Education, Karnataka, is provided by Universities which have Industrial Chemistry course in its curriculum. Students whose family Annual Income limit is below INR 2,00,000/- (SC/ST) and INR 1,00,000/- (OBC) and have above 75% attendance in class can avail this scholarship.

Another scholarship platform by NSDL e-Gov called **Vidyasaarathi** allows students to apply for various scholarships provided by corporate without charging any fees during the time of scholarships' applications. Under Graduate students with minimum of 50% in HSC and family income ranging between 0.00-5,00,000 Rupees can apply for this and avail this scholarship.

Karnataka State Government has also introduced **Vidyasiri Scholarship** which requires the student to be a domicile of Karnataka with family's Annual Income not more than Rupees 2,00,000/-. Another requirement is that the minimum distance between the students' residence and college is required to be 5 km and the student must have passed all backlogs. Even hostel and PG students can avail this scholarship.

Many Universities which provide course in Industrial Chemistry also provide the above mentioned scholarships. This way students with financial crisis can be encouraged to take up Industrial Chemistry courses and this will ensure their bright future into various professional fields (as mentioned in Table2) which is truly like opening doorways to them through Industrial Chemistry so that they can easily step into the world of "Going Global with Higher Education".

Furthermore, these universities also provide 'Virtual Class' facilities to students like the Governments Arts and Science (Autonomous) College, Karwar (NAAC accredited) which has Virtual Class Facility which the students can avail. These Universities also are able to provide students and it's faculty members with equipments and libraries which are aided by Inter University Centers. This way library provides certain number of Reference books to its students which helps them with their syllabus and Academics. Universities provide students with both theory and practical education which are linked to one another given the fact that they have well equipped classrooms and laboratories and also provide Project Inplant training and Internship opportunities through which students get the opportunity to work in an industry or a hi-tech lab environment thus giving students more insight in the practical aspects of Industrial Chemistry and its applications and significance in the Human Society. Students learn more about various sectors of the Industrial Chemistry like Research and Development(R & D), Quality Control(QC) and Quality Assessment(QA).

Campus Selections are also held in Colleges and Universities where various Companies come and offer jobs to deserving students. Some of the companies which offer QA and QC jobs are-

- i)- Saicore Solutions in Bangalore with 15 vacancies, INR 2,50,000-3,00,000 P.A. salary(posted on April 08 2019/naukri.com).
- ii)- Winston HR Services in Ahmedabad with 2 vacancies, INR 1,00,000-2,75,000 P.A. salary(posted on April 06 2019/ naukri.com).
- iii)- The Pharma Patashala in Hyderabad (salary not disclosed), requiring 2-7 years of experience(posted on March 25 2019/ naukri.com).

and many more....

The Industrial Chemistry Post Graduate students who graduated from Governments Arts and Science (Autonomous) College, Karwar (NAAC accredited) are now working in various companies and undoubtedly have a bright future and The Governments Arts and Science (Autonomous) College, Karwar does have a list of Prominent companies like- Hindalco, Belgaum; Aditya Birla Group, Binga; Cipla, Goa; Biocon, Bangalore; Micro labs, Goa; Tulip Diagnostics PVT, LTD, Goa; Dr. Reddy Company, Bangalore; Sequent Pharmaceuticals Ltd, Mangalore; Solvay Speciality Polymers India PVT LTD, Gujarat. (Batch wise Employment Distribution of Governments Arts and Science (Autonomous) College, Karwar in Table 3)

(Table3)

	Batch I	Batch II	Batch III	Batch IV	Batch V	Batch VI
Industries	8	7	12	7	12	6
Teaching/Research	2	4	6	1	1	5
Others	3	4	1	6	6	8
IIT/Financial sectors	2	0	0	0	1	0

This way by the help of the Scholarship Programs and The Higher Education Sector, NAAC, RUSA, UGC, IUCs etc.. we can provide better education and jobs to many people in the 'Field of Industrial Chemistry' and truly go global in Higher Education and give this society a new perspective – a New Dimension. This way we can improve education, Higher Education, industries and the Human Society and by doing so we can truly open doorways through Industrial Chemistry which lead to Higher Education and it's globalization.

CONCLUSION:

We aim to make people aware of the Industrial Chemistry Course and bridge the Gap between the academic aspects of Industrial Chemistry and the industrial aspects of this field. We also want to familiarize people with the career opportunities that this field can provide and how useful and helpful this branch of science can be in the field of Higher Education if given the right circumstances and also how its collaboration with the Higher Education Sector can really improve the living standards of the society. We wish to tell the people the significance of Industrial Chemistry as an academic course in the field of Higher Education and also its importance in industrial sectors and the human society. We promise to meet society's needs while remaining concerned about the environment and aim to provide better platforms for students for a bright & remarkable career.

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