Preface

Research at CHARUSAT

Dear Readers, It is my great pleasure to present to you the second issue of the CHARUSAT Journal of the Charotar University of Science and Technology, Anand. Taking advantage of this opportunity, I would like to share with you some news about the research at CHARUSAT University.

Research is a process which involves the application of multiple fields to understand and get solutions to one problem. CHARUSAT offers the students a platform to do research in various disciplines and hence the chances and ease of doing multi-disciplinary research is at it's best in the campus.

CHARUSAT highlights and encourages research projects. Research-oriented M.Sc., M.Pharm. and M.Tech. programs have been started and quality research has always been an vital criterion in faculty selection.

An important goal of the research activity at CHARUSAT is to improve the excellence of interaction between the institute and industry for resolving technical problems in the broad field of Engineering and Sciences.

Similarly important is the aim of stimulating and enhancing the research ability and potential of CHARUSAT students who have the interest and aptitude to carry out innovative research.

At present dynamic research is being carried out within the institutes into various aspects of science and engineering, and also into the many ways in which technology and science impact society and culture.

The CHARUSAT institutes are provided with well-equipped laboratories, specialized equipments, the full range of required infrastructure, including campus-wide networking and high-speed internet access, subscription to hundreds of print and online journals, and more.

In Gujarat, there are no such research institutes where budding researchers and students could go for great quality science education at the undergraduate level. One thing is unquestionably clear: students should learn science in an atmosphere where thrilling research is being conducted simultaneously. In fact, it is considered important that there must be a new system where the students themselves would participate in research. Moreover, an interdisciplinary coordination of learning is sought in which students would get a stable foundation in all the sciences before choosing to specialize in one.

We hope this concept will break down fake barriers between research and undergraduate teaching, as well as barriers between foremost scientific disciplines. Once the comprehensive objectives will be clear, things will move very rapidly.

Here at CHARUSAT, Students doing their masters programme are always encouraged to appear and clear national entrances like CSIR-NET, GATE, etc.

I think the better research output can come by involving more students to do research as that will provide more ideas and deeper understanding for any particular research problem. Hence we are encouraging more students to enroll for Ph.D. programme. Also, all Ph.D. students are provided with fellowship as per the UGC norms to keep them motivated throughout the Ph.D. tenure. This will motivate more students to enroll for Ph.D.

We are organizing conferences and lecture series very often in every departments to provide a platform to interact with scientists and researchers from across India and Globe.

We are offering statrtup grant from university to the research guides to do some preliminary work, which is a mandatory requirement for any project to be

submitted to any national funding agency like DBT/DST.

A good piece of research work is impossible without involving the expertise of different disciplines, and hence we are encouraging collaborative research and possibly industrial collaboration.

The instrument facilities on campus does not have any charge for the students doing Ph.D. from CHARUSAT.

About the CHARUSAT Journal

It is a peer-reviewed journal publishing articles in open ground to promote the author and building capacity on various multidisciplinary research issues. This Journal would like to devote its point to recognize research ideas through the potential young researchers for our country's development. It is a knowledge base platform to uplift regular practice through writing, publishing and disseminates research findings to gather new knowledge interacting with other researchers in respective fields. Thus, students and young researchers can find a path to grow expertise in respective fields as per their standpoint and interest and more significant positive gains in attitude and motivation will be grown gradually.

Objectives of the Journal

The foremost objective of this journal is to promote authors and researchers to grow expertise in respective fields through the publication of diverse articles. Moreover, it tries to establish a platform in which people's voice can be raised by the views of young researchers for country's well being, benefit and development. In this regards, this platform assists several programs for the promotion of research activities, publication of findings and newly collected knowledge.

Goal of the Journal

This journal will work for the continuation of publishing and promoting young researchers through capacity building in field base article writing and gathering of new knowledge with proper innovations and guidelines.

Subject Area of the Journal

CHARUSAT Journal publishes research articles, literature review articles, etc. Manuscripits are welcome from all fields of life sciences. The typical topics include, but are not limited to the following fields: Biology, Cosmology, Physics, Nanotechnology, Chemical Sciences, Artificial intelligence, Communication Studies, Paramedical Science, Nursing, Physiotherapy, Computer Sciences, and Environmental engineering.

The CHARUSAT Journal was intended and founded to signify the increasing needs of computational science as an emerging and progressively vital field, now widely recognized as an integral part of scientific and technical investigations. Its operation is to become an opinion of the Biological sciences, computational science community, addressing researchers and practitioners in areas extending from cosmology to biochemistry, from electronics to environmental sciences, from mathematics to software architecture, giving demonstrable computational methods, findings, and solutions.

CURRENT TRENDS IN SCIENTIFIC RESEARCH

Science and the scientific research are crucial for the development of any country and its economy. Every country has its own amount of funds being allocated for the research and development that encompasses various fields of research, including physical, biological, chemical sciences, along with space research. In current years, the scientific community and affiliated professions have toyed with the idea of generating a "lab of the future." Vendors, research organizations, and engineering and design firms have all begun to explore how contemporary scientists work within research environments and how the physical layout of labs can better support their endeavors. This process has been driven by a desire to substitute more effective collaboration among scientists, rise the number of new ideas entering the pipeline, and permit for more elasticity over the life cycle of a research facility.

One matter that can't be overlooked is that these initial considerations have unfolded during a time when scientific labs were less in comparition with the space allotted for equipment and analysis.

The work patterns, in general, have changed, and shall still continue to change. The type of research that is currently being conducted worldwide is not limited to a single principle investigator and involves various collaborators instead. This is the demand of the time and the type of research which requires different types of analysis to the same issue. This helps giving a clear and better understanding of any issue being addressed. Scientific research used to comprise basic requirements for personal space. Researchers required a six foot long work bench and a four foot long desk. Earlier, the research used to be limited to wet lab

experiments, which have now been replaced by dry lab experiments that involve use of bio-informatic tools, docking studies for understanding the receptor-ligand interactions in a better way, and also the most recent artificial intelligence (AI), which shows better collaboration of all disciplines of science towards one scientific problem.

As we all know that scientific community including research organizations and technological firms have started dreaming about Virtual and intelltual science from physical hard science. This will provide research organizations with unswearing data hubs and better communication connectivity in the field of technology. With new format of visualizing and analysing techniques, data will continue to hoard more rapidly that researchers can analyze it with accurate and reasonable automated analytical software endorsing collaboration among scientific communities. With changing technology, new ideas and approaches for designing automated labs requires sufficient space to do upgraded research in this new emerging world. From our current vantage point, it may be difficult to predict how the scientific and modern lab will look and function in what manner! Till now, science and technology has evolved way ahead. Presently, through flow chip technology, over a billion compounds can process per day rather than automated genome sequencing processing 10,000 compounds per day.

Now-a-days, enterprises are shifting the consumer focus towards more emerging trends and technologies which makes consumer lives more easy and affordable to extent. The field of nanotechnology is going to be evolved to the most by 2025 and shall be applied from toothpastes to car tyres to clothing, which will aid to betterment of individual's life. Other such evolvement is Artificial Intelligence (AI) which is a new hangout among the consumers. According to David Sackman, CEO of Lieberman Research Worldwide, Amazon's Echo, Google Home, and other chat bots are making artificial intelligence at success which in near future will ease the task of engagement, survey, and questionnaire development. According to data, scientists, AI will significantly aid in market analysis, but it will be a challenging task to eliminate traditional research methods altogether. In a field of medicinal/ digital pharmaceutical technology, scientists develop 3D printer- computer for producing any prescription drug accurately in a short time by inputting formulaic quantities of chemicals. This will provide society more accurate and effective treatment towards individual's illness as the computer will allow drugs to personalize according to respective need of an individual. Therefore, with varied forms of 3D printing technologies in medicine, it could transform the digital health industry, and eventually help society to live healthier and better life. The world's first bioeleccetric medicine (wireless device) have been successfully launched which speeds up the nerve regeneration and heal the damaged brain nerves. In the field of Cosmology, scientists have found 12 new moons orbiting around Jupiter, bringing its total number of moons to 79 in the solar system. Therefore, a key part of this assignment is confirming that the scientific community is well equipped with tools and technologies which are needed to evolve the digital science towards new heights.

The medical research these days is no more related to biochemical testing. Various genetic testings have taken the market by storm. Genetic testing has been possible due to the boon of human genome sequencing, which was one of the major breakthroughs in scientific research. Research in the field of genetics of various hereditary diseases has identified major polymorphisms in the genetic make-up of individuals which can render them susceptibility towards any genetic disease. Hence, this tool could be used to progress towards personalized medicine, which could involve testing a person's genetic make-up for any disease, thereby taking measures to prevent the disease development.

Various pharmaceutical companies throughout the world have channeled their research funds towards development of innovative molecules that could be used as a drug, which requires a synthesis of novel molecules. This is where chemistry in the wet lab and docking in the dry lab needs to collaborate for giving better and accurate results.

CHARUSAT Journal welcomes the research from various fields of science and technology, which adds in for the welfare of the society.

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