



K. J. Somaiya Institute of Engineering and Information Technology
Sion, Mumbai



Academic Year 2018-19

ACADEMIC VISIT REPORT

To

R V COLLEGE OF ENGINEERING

R V VIDYANIKETHAN POST

MYSURU ROAD BENGALURU, KARNATAKA, INDIA.

AND

CENTRE FOR NANO SCIENCE AND ENGINEERING (CENSE)

INDIAN INSTITUTE OF SCIENCE, BANGALORE - 560012

KARNATAKA, INDIA.

Team of KJSIEIT (K. J. Somaiya Institute of Engineering & Information Technology)

1. Dr. Suresh K. Ukarande, Principal,
2. Dr. Sunita Patil , Vice Principal
3. Dr. Namrata Gharat, Dean Academic
4. Dr. Harsha Mishra, HOD BS&H
5. Dr. Radhika Kotecha, HOD IT
6. Mrs. Sarita Aambadekar, HOD Computer
7. Mrs. Vrinda Ulhas, Dean IQAC

Visit Dates : 26th & 27th June 2019

**R V College of Engineering,
R V Vidyanikethan Post Mysuru Road, Bengaluru,
Karnataka, India.**

R.V. College of Engineering (RVCE) established in 1963 is one of the earliest self-financing engineering colleges in the country. The institution is run by Rashtreeya Sikshana Samithi Trust (RSST) a not for profit trust. The trust runs over 25 institutions and RVCE is the one of institute under the trust.

The visit at RV campus started with breakfast at Caurvery Block and then Research department, Incubation Centre, Aerospace Engineering department, etc.

Dr. K.N. Subramanya, Principal, R. V. College of Engineering, accompany with our team for the whole day.

RVCE Department

1. Aerospace Engineering
2. Biotechnology
3. Chemical Engineering
4. Civil Engineering
5. Computer Science and Engineering
6. Electrical and Electronics Engineering
7. Electronics and Communication Engineering
8. Electronics and Instrumentation Engineering
9. Industrial Engineering and Management
10. Information Science and Engineering
11. Master of Computer Applications
12. Mechanical Engineering
13. Electronics and Telecommunication Engineering (Telecommunication Engineering)
14. Basic Sciences

The team visited most of the departments, research lab, Incubation centre, seminar halls, facility centres like sports, etc.

Center of Excellence (COE) on Macro-Electronics

The visit was accompanied by Principal RVCOE and In-charges of different section of COE. They explained function of all the equipment of the lab .Macro Electronics Lab is well equipped with fabrication and characterization equipment. Fabrication equipment includes PECVD cluster tool, solar metallization unit, Box coater, Solar thermal absorber and Lithography unit. COE has characterization equipment like Confocal Raman Microscope, Atomic Force Microscope, Differential Scanning Colorimeter, X ray diffraction Instrument, UV –VIS Spectrophotometer and FTIR Spectrophotometer. Inter disciplinary research activities are going on in micro and nano scale electronics, nano technologies, Micro-electronics system (MEMS), Polymer bio-sensors, Plasmonics, etc. COE is running several projects, funded by DST, DRDO, UGC and AICTE. Faculty and research scholars of COE organize short term training programs on fabrication and characterization. They have shown keen interest in collaborative research work.

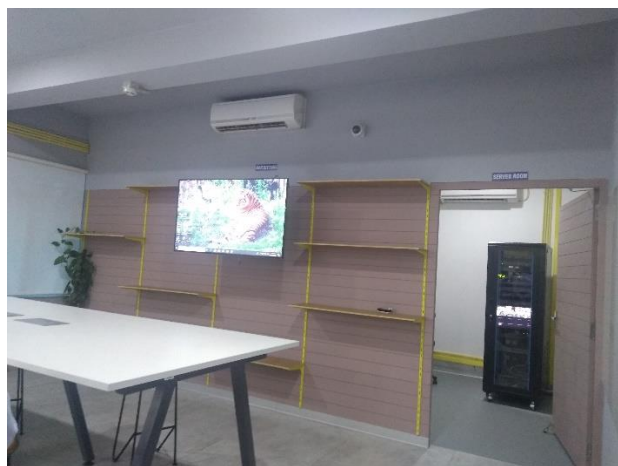
Department of Chemistry & Department of Physics

The department was visited by Dr. Harsha Mishra and Ms. Vrinda Ullas. They were accompanied by HODs of concerned departments. Chemistry and Physics labs are well equipped as per first year curriculum. These subjects are opted as optional subjects by higher semester students. Chemistry department also has research lab for Ph.D. students with chemical synthesis facility.

RV Incubation Center :

R. V. College of Engineering has set up an incubation center to train potential entrepreneurs and foster start-ups. Start-ups are permitted working in the incubation center for a period of 6 months to 3 years. The center has a dedicated server and 100 Mbps internet connectivity. The infrastructure of this incubation center is developed in a way to provide a free environment where innovative ideas are ignited and creative thinking is promoted. Also, the start-ups have access to all the equipment available in the laboratories of the institute. Start-ups are working on projects like bio-degradable flowers wherein real flowers may be re-used for a longer period - hence saving money and the environment.

Glimpses of RV Incubation Center :

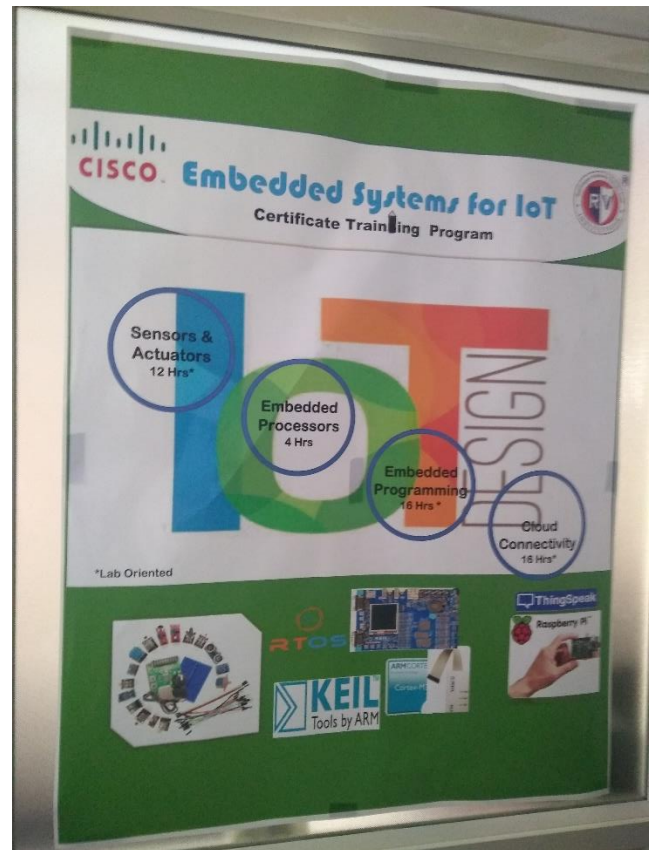


CISCO - RVCE Center of Excellence in Internet of Things:

R. V. College of Engineering has set up a Center of Excellence (CoE) as a joint initiative with Cisco to empower young minds through knowledge and training for enhancing employability, research and innovation in emerging field of Internet of Things (IoT).

Several activities are conducted under the CoE, such as training program on IoT Application Development, Industrial Internet of Things, Certification Course on Intelligent Analytics, Certification Course on Embedded System for IoT, National level Ideathon on Intelligent Transport System for a Safer, Smarter and Sustainable Transportation, Cisco - RVCE IOT Hackathon, etc. Projects like Solar Data Analysis, Plant Growth Monitoring, etc. are undertaken by the CoE.

Glimpses of Activities by CISCO - RVCE Center of Excellence in Internet of Things :

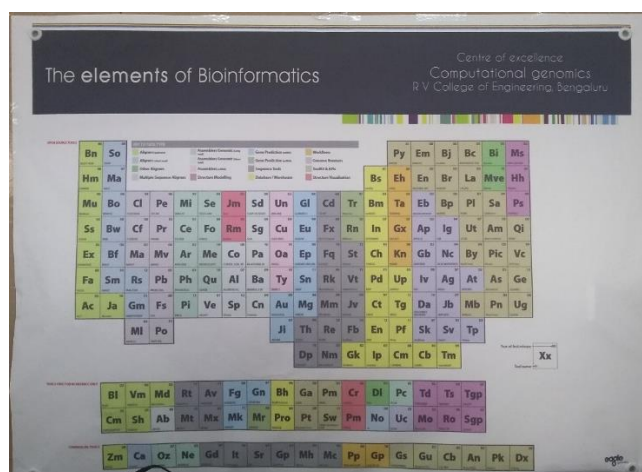


Center of Excellence in Computational Genomics:

R. V. College of Engineering has also set up a Center of Excellence (CoE) in Computational Genomics in association with partner agencies like Quantumzyme LLP, AICTE, Science and Engineering Research Board (SERB), European Bioinformatics Institute (EMBL-EBI), Indian Institute of Horticultural Research, etc.

Under the CoE, Bioinformatics Sponsored Projects / Consultancy worth INR 11 Crore are on-going in the institute as well as few patents are filed too. Some of the projects undertaken are Genetic Enhancement of Mulberry by Genomics Approaches Assessment of SNP Variation in Silkworm by RAD Sequencing and Genome-wide Association Mapping of Important Commercial Traits, Functional characterisation of oxidative stress responsive transcription factors from contrasting rice genotypes by adopting chemical genomics approach as an alternate option, etc.

Glimpses of Activities by RVCE Center of Excellence in Computational Genomics :



Department of Information Science and Engineering:

Department of Information Science and Engineering has a research centre with several kits for R&D such as Wireless Sensor Network Educational Kit, Natural Language Processing Kit, Internet of Things kit, etc. approx. worth INR 22 lacs in total. Also, the department has invested approx. 18 lacs for their TE Connectivity and NLP laboratory. Several funded R&D projects such as Effective Multimedia Information Retrieval using Optical Indexing Technique, Text Analytics, A New Framework for Analysis, Generation and Translation in Indian Languages, etc. are developed in these labs. Students too are working on minor projects like Optimum Solution to Malaria Parasite Detection using Deep Learning, Edge Computing to Make Smart City Applications More Reliable, Augmented Bakery Menu, etc. in these laboratories.

Department also has many consultancy projects from industries & organizations like Naval Research Board, UGC, AICTE, Armament Research Board-New Delhi, General Motors, TE Connectivity India Pvt. Ltd., etc. The department has few patents filed and published to its credit.

Department has signed MOUs with companies like EMC2 for Information Storage Management, Samsung for Mobile Handset Software Design and Application Development with Android, MindTree for Software Practice and Testing, Infosys for Business Intelligence, AMD for Heterogeneous Computing, SAP LABS for Business by Design, Sparks Systems India for Enterprise Software Architecture, etc. The department has excellent placement records as well.

The department has contributed towards the institute by developing software for institute management such as Software application for Examination work automation, Software for online appraisal of faculty by students, Application Developed for Lab Examination, Bar code application for coding and decoding of answer scripts, etc. The department has a fully equipped seminar hall with state of art audio systems and dual projector facility with capacity > 120.

Glimpses of some best practices in Department of Information Science and Engineering are:



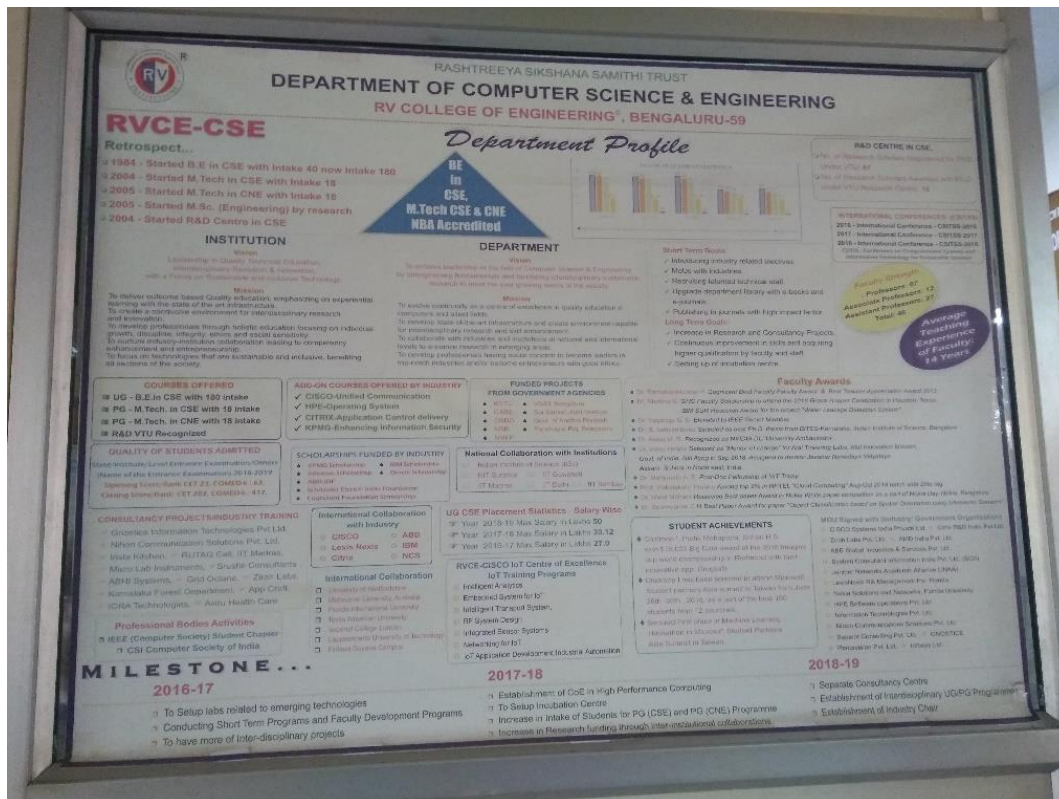
Department of Computer Science and Engineering:

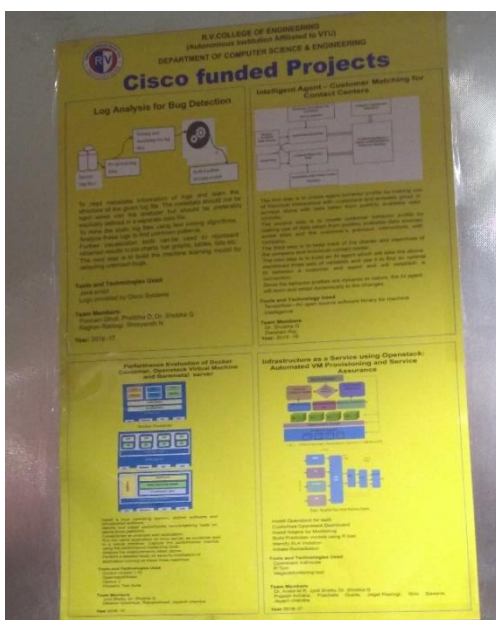
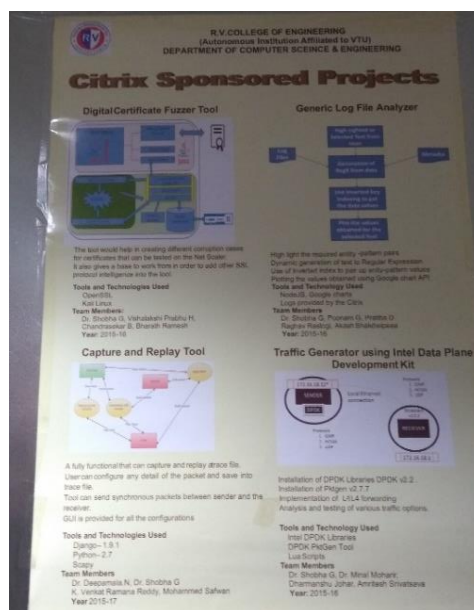
The Department has an excellent placement track record with an average annual salary of INR 11.15 lakhs and highest annual salary INR 50 lakhs. The graduates and post-graduates of the department are placed across leading software companies like Adobe, Cisco, Yahoo, Microsoft, PayPal, Flipkart, Intel, IBM, Amazon, Oracle, Google, Infosys, E-bay, Citrix, NetApp, Morgan Stanley, Goldman Sachs, Samsung, Juniper Networks and many more. The department has MoUs with various companies including Cisco Systems(India) Private Limited, Citrix R&D India Pvt Ltd, Infosys Technologies, ZIROH Labs Pvt. Ltd., etc. Also, Nokia and Citrix conduct classes for students of the department on emerging technologies. The department organizes international hackathons in association with industries like Intel and IBM.

The department has 3 industry sponsored laboratories: RVCE-Cisco Network Lab, IBM INDIA Pvt Ltd. Mobility Lab and NVIDIA GPU Research Center. This GPU Research Center has High Performance Computing Cluster worth more than 50 lakhs. Tools such as LDRA for software analysis costing INR 12 lakhs are also available in the department.

The department has undertaken many research and consultancy projects funded both by multinationals and government agencies like, Naval Research Board, Armament Research Board, DRDO New Delhi, AICTE, etc. worth INR 1 crore. During last five years the department has, to its credit nearly 450 publications and 7 patents.

Glimpses of some best practices in Department of Information Science and Engineering are:





<div>  R.V. College of Engineering, Bangalore - South Department of Computer Science and Engineering Local Endsem Review Exams </div>											
Sl. No	Topic	Project Title	Assessing Faculty	Assessing Period	Assessing Location	Assessing Time	Assessing Marks	Assessing Status	Assessing Remarks	Assessing Signature	
1	1	1. Data Processing 2. Data Mining 3. Data Analysis 4. Data Visualization 5. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
2	2	2. Data Processing 3. Data Mining 4. Data Analysis 5. Data Visualization 6. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
3	3	3. Data Processing 4. Data Mining 5. Data Analysis 6. Data Visualization 7. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
4	4	4. Data Processing 5. Data Mining 6. Data Analysis 7. Data Visualization 8. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
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16	16	16. Data Processing 17. Data Mining 18. Data Analysis 19. Data Visualization 20. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
17	17	17. Data Processing 18. Data Mining 19. Data Analysis 20. Data Visualization 21. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
18	18	18. Data Processing 19. Data Mining 20. Data Analysis 21. Data Visualization 22. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
19	19	19. Data Processing 20. Data Mining 21. Data Analysis 22. Data Visualization 23. Data Security	Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan Dr. S. S. Srinivasan	2023-2024	Dr. S. S. Srinivasan	2023-2024	100	100	100	100	
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Department of Electronics and Telecommunication:

We have visited RF & MICROWAVE LAB which consist of equipment with Microwave benches (Three X-Band and One k-band), Directional couplers, Magic TEE setups, Circulator and Isolators, Micro strip patch antenna steps (automated & switches), Horn and parabolic antenna setups.

ADVANCED RF and wireless communication lab equipped with Vector Signal generator, EXA Signal Analyzer 10Hz-7GHz N9010A, PXB Baseband generator and channel emulator N5106A, MSO7104B 1GHZ Mixed signal Oscilloscope, 13GHz 13 GHz R&S Network Analyzer.

Many research work and consultancy projects are going in the field of Antenna . For measuring radiation pattern they have developed lab, where they observe the radiation pattern of antenna and compare that pattern with vector analyzer .

Department has received grants from Defense Research and development Organization in the field of antenna.



MAJOR RESEARCH AREAS

- Nano Materials
- Nano-electronics
- Process Technology
- MEMS & NEMS
- Modeling & Simulation

RVCE:

Joint research projects may be carried out with RVCE. They have research centers where our faculty may enroll for Ph.D.

Focus areas:

Sensors, Networks and Communication (RF & THz)

Nano Science, Surface Engineering & MEMS

Data Mining/ Data warehousing or Business Intelligence, Cloud Computing,

Environment And Sustainable Technologies with a focus on Smart buildings and Smart Cities

Clean & Renewable Energy, Energy Efficiency & Management

Seminar halls

RVCE has 13 Seminar halls and 1 large Auditorium with state-of-the-art Audio-Visual facilities to conduct, National & International Conferences, Workshops and Symposia. One of the seminar halls has advanced facilities viz. Audio DSP, iPad Docking station and video conferencing.



Hostel

Hostels in RVCE provide the best possible comfort needed for students.

Hostel Name

- Sir M. Visweswaraiah Block :Final year students
- Diamond Jubilee Block - Guest Rooms and Second year students
- Cauvery Block: First year students
- Annex Block - Students Guest Rooms and PG Students

Hostel for Boys are located at R. V. College of Engineering Campus

There are three mess facilities one for first year and the other two for seniors. There are exclusive Vegetarian mess facilities.

Our team had healthy and tasty breakfast and lunch at Caurvery Block.

The hostelites are provided sports, gymnasium and browsing facilities.



Centre for Nano Science and Engineering (CeNSE)

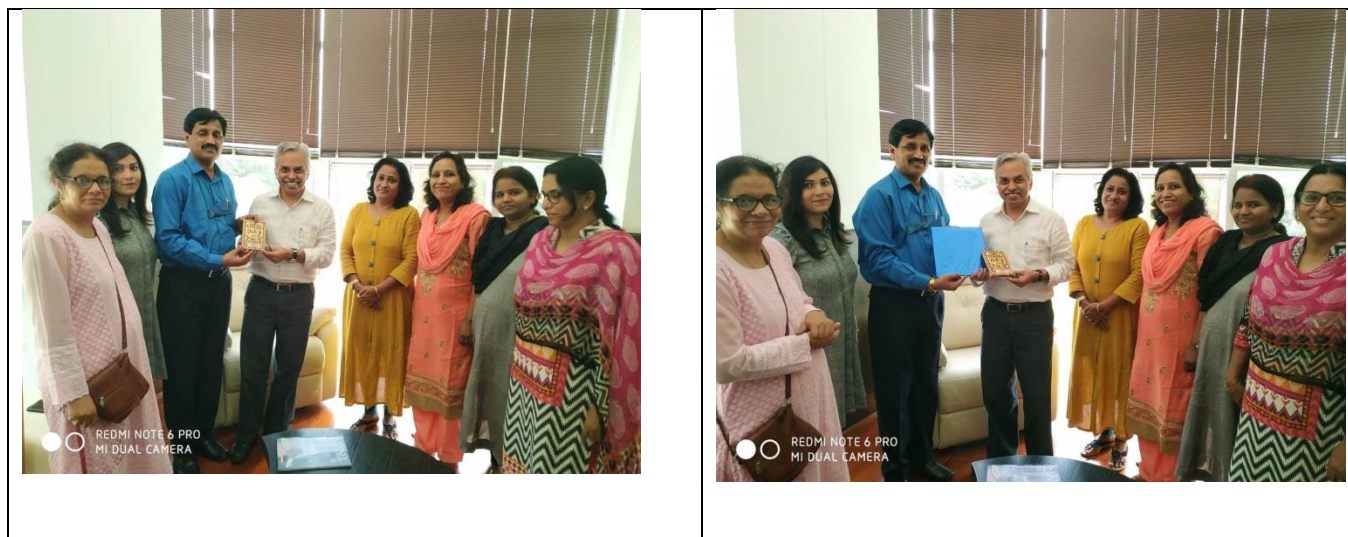
Indian Institute of Science, Bangalore – 560012, Karnataka, India.

The Centre for Nano Science and Engineering (CeNSE) was established in 2010 to pursue interdisciplinary research on the nanoscale. Topics of interest include, but not limited to materials, electronics, MEMS/NEMS, photonics, biotechnology, and solar cells. If you have an exciting and revolutionary idea, come talk to us. We welcome both academic and industry collaborations.

CeNSE houses a state-of-the-art national nanofabrication centre (NNfC) with 14000 square feet of class 100/1000 clean room. It also houses a comprehensive micro nano characterization facility (MNCF) to conduct virtually any type of electrical, optical, mechanical and material characterization. Both of these are national user facilities accessible to outside researchers for very reasonable charges.

The centre has been built around two central facilities – The National Nanofabrication Centre (NNfC) and the Micro and Nano Characterization facility (MNCF). Both are national user facilities, i.e. they are accessible to outside academic and industrial users.

Supporting the central facilities are the MEMS and IC Packaging lab, the Computational Nano engineering (CoNe) laboratory, Systems Lab, and 14 other functionally distinct laboratories managed by various research groups. In keeping with Centre's collaborative and open atmosphere, access to these laboratories can also be provided after appropriate permissions.





National Nanofabrication Centre consisting of a comprehensive 14,000 sq. ft. clean-room facility with capability for:

- Photolithography.
- Developing unit processes for chemical & physical vapour deposition (CVD) of most commonly used semiconductors and dielectrics, such as Si, SiGe, Ge, SiO₂, SiN_x, Al₂O₃, TiO₂, etc.
- Developing unit processes for wet and dry etching of most commonly used semiconductors and dielectrics.
- Fabricating complete MEMS sensors, gas sensors, GaN HEMTs, Si solar cells, novel 1D and 2D devices including graphene and MoS₂, and photonic circuits.
- Developing new and customized processes for MEMS/NEMS devices, microfluidic structures, and semiconductor devices for industries and other laboratories.
- Inline characterization using various metrology tools.

The one of its kind micro and nano characterization facility (MNCF) aims to be a single shop for all a characterization needs of any nanofabrication process. Capabilities include:

- Complete electrical characterization of devices from DC to 110 MHz and at 4K to 400K temperature, using an array of probe stations and parameter analysers.
- Ability to characterize RF devices up 70 GHz.
- Ability to measure power conversion efficiency and external quantum efficiency (EQE) of solar cells.
- Metrology of thin-films using optical profilometer ; acoustic microscopy; and atomic force microscope (AFM), including advanced modes such as piezo response, conductive, magnetic-force, scanning-tunneling atomic force microscopy, etc.
- Comprehensive characterization of bulk materials and thin-films using Raman; photoluminescence (PL); electroluminescence (EL); Fourier transform infrared spectrometry (FTIR); X-ray diffraction (XRD); X-ray reflection (XRR), photoemission spectrometry (UPS and XPS); and UV-Visible spectrometry.
- Field-emission scanning electron microscopy (FESEM) with dual beam focused ion-beam (FIB), EDS and monochromator (MonoCL).

MEMS & IC Packaging Facility

MEMS and IC Packaging facility has the complete capability to convert a wafer into a packaged device – from wafer sawing to wire bonding to precision welding. In addition, there are dedicated setups for pneumatic/hydraulic pressure calibration for pressure sensors and acoustic calibration for acoustic sensors.

CONCLUSION

The purpose of the visit was to understand the working and concept of Autonomous environment and the best place to visit could not have been any other college than the one we visited as these are one of the most prestigious institutes in the country and also being an Autonomous institute from a long time.

The experience was rich and enlightening which will help us to develop and mould the Autonomous culture in our institute and also to develop mutual relation between our institute and the above mentioned prestigious institutes.