



Institutional Innovation Cell (IIC)
And
Department of Physics
Organized
Two Days hands on training workshop and field visit
on
Research, Career Opportunities and Instrument Exposure
for Physical Science Students

Date: 19th and 20th November, 2022 (Saturday, Sunday)

Time: 10:30 am to 5:30 pm

Venue: C-III- Hall

No of beneficiary- 35

REPORT

The two day's hands on training program organized by Department of physics in collaboration with Institutional Innovation cell was inaugurated by auspicious presence of Dr.J.J Chavan, Dean, Science and Technology, Karmveer Bhaurao Patil University and Dr.A.P Torane,Vice-Principal, Yashwantrao Chavan Institute of Science, Satara on Saturday 19th November 2022. Dr.Mujawar S.H, Assistant Professor , Physics delivered welcome address and stated purpose of the program. The purpose of such event is to inculcate aspects of research during education, develop career aspects through research. Program was so carefully planned according to the needs of the student. Hands on training of research instruments along with the informative talks of the resource person was carried out during these two days. The Chief Guest Dr.J.J.Chavan, in his talk congratulated all enthusiastic faculty and research scholars for organizing such innovative event. Dr.A.P Torane, President of the event also explained motive behind the workshop and welcomed all the participants. Miss.Pawar.P.S presented vote of thanks of the inauguration session

Photos of Inauguration -



Session-1

Speaker-Mr.Annirudhha Mohite

Mr. Anirudhha Mohite, Research scholar, Physics conducted first session on “Introduction on the Gas sensor”. The talk based on tremendous career opportunities and a sense of job satisfaction in the field of physics . He also motivated students to develop their careers through physics in various areas such as teaching in Colleges/Schools, carry out Research for which students can get multiple fellowships, also, they can grab opportunities to work with reputed institutions like IISc, IIT, TIFR, etc., or different universities call for Ph.D. openings). He also explore opportunities in government organization (like ISRO, BARC, DRDO, NTPC, ONGC, BHEL, etc.),

He explained why gas sensor is one of the most important devices to detect noxious gases, provides a vital way to monitor gas concentration and environmental. Therefore, research on high sensitivity, selectivity, and stability has become a hot issue.

With explaining need for ubiquitous gas sensing provides an outstanding opportunity for miniaturized devices created with MEMS technology he mentioned few types of gas sensors according to their operating mechanism (catalytic, electro-chemical, chem-FET, resonant, metal oxide semiconductor (MOS), infrared (IR), chromatography, photo-ionization, chemiluminescence, etc.). MOS-based sensors are the most suitable for cost-sensitive, low-power applications such as disposable medical, smart homes, and consumers.



Session-II

Speaker-Miss.Amruta D.Salunkhe

Second session carried out by Miss Amruta D. Salunkhe it was based on Super capacitors- the future of energy storage. In her talk, focused on electrochemical energy storage devices effectively and future scope on super capacitor in various fields. During the talk she covered every single point like what is super-capacitor, introduction, and types of super-capacitor, construction and working in detail. She also focused on points where precaution needs to be taken in checking application and characterization, result & discussion. Participant actively took part in the discussion.



Session-III

Speaker-Mr.A.V.Ghorpade

Third session was conducted on the introduction to memory storage devices by Mr.Ghorpade sir..He elaborated recent advances in memory devices,specifically using fourth electric component memristor. With device fabrication , working to Its very excited to learn about all these various areas where they can put their efforts and develop their career.

Training Session Day First

After short lunch break ,hands on training session of the day began with demonstration on Gas Sensor testing kit by Mr Mohite.He showed working of potentiostat,how gas sensing is done,parts of device and interpretation of graph.



In the second session of the day 1, Mr. Suhas H. Sutar, Ph.D. fellow from the Department of Physics demonstrated Scanning Electron Microscope instrument which is basic material characterization technique used for the morphological analysis of prepared samples. He elaborated the use of machine and role of SEM characterization in the material science research. He showed the sample preparation technique to the participants and use of software to operate machine.

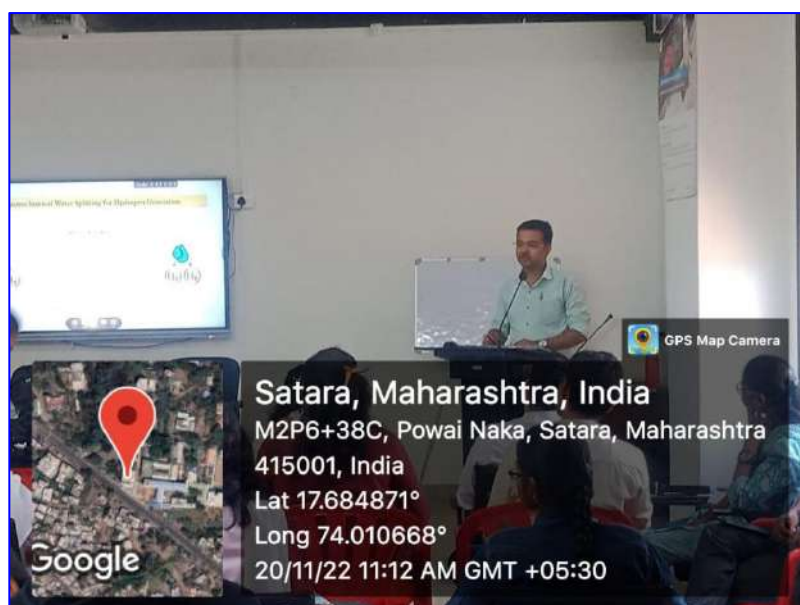
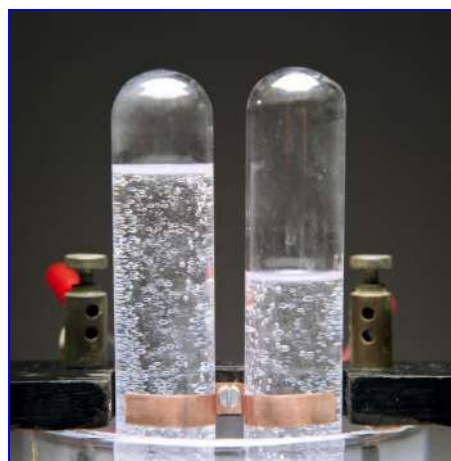
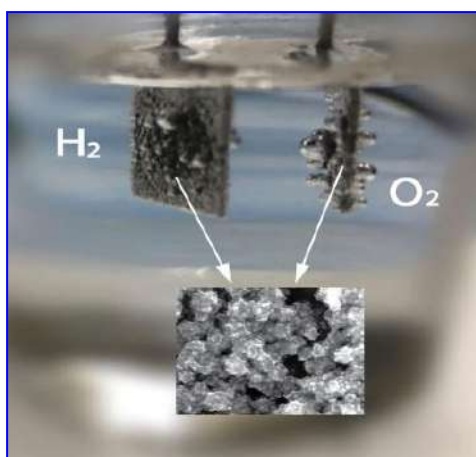


Next demonstration was on spray pyrolysis technique which is used to deposit thin films. Mr. V.C. Pawar, Asst. Professor and Mr. G. Y. Chorge, Asst. Professor, YCIS gave importance and wide application of deposition of thin films using this technique along with operating the device.

Session-IV Day II

Speaker- Mr.S.D.Jituri

Next day started with one interactive session on electrochemical Water splitting: Hydrogen generation by Mr. S.D.Jituri, Assistant Professor, YCIS, Satara. He explained, in order to sustain the energy demand of the industry and keeping greenhouse gas emission in account, hydrogen fuel is considered as an ideal fuel for the future due to high energy density (140 MJ/Kg), combustion without emission of greenhouse gas emission and easy transportation/storage. There are various ways to generate hydrogen fuel but the water splitting is considered as an efficient way to produce hydrogen fuel. Water splitting is also accompanied by thermolysis, electrolysis and photolysis using heat, electricity and light as the source for the water splitting respectively.



Session- V

Speaker-Mr. Suhas H. Sutar

In the second lecture of the day 2, Mr. Suhas H. Sutar a Ph.D. fellow from the Department of Physics delivered a lecture on the title “Introduction to Bifunctional: Electrochromic Energy Storage Devices”. During his talk, he introduced participants to the attracting and efficient way to store energy along with smart function i.e., potential assisted reversible colour change. The main focus of his talk was need of energy storage and developed smart storage technologies. He talked on both theoretical and experimental aspects of the electrochromism as well as pseudocapacitor. At last, he showed his research work and discussed with participants.



Session VI

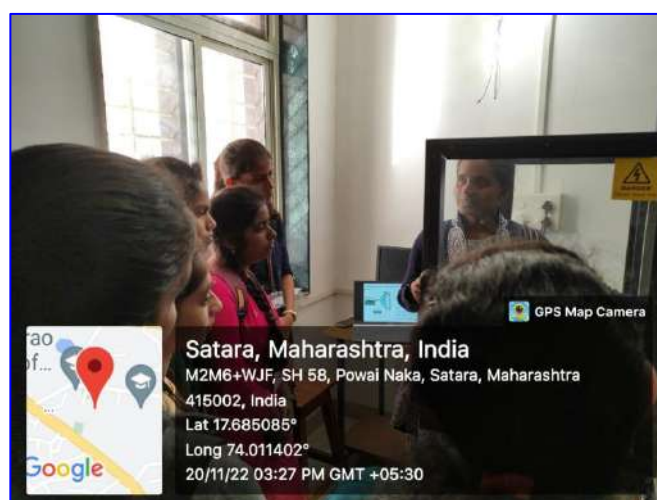
Speaker- Mr. Aman Chaudhari

In the last session of the second day, talk was delivered on the topic perovskite solar Cell and simulation by Mr. Aman S. Chaudhari. The talk started with flow of electron and hole current. It further explained basics and types of semiconductors. It emphasized on formation of p-n junction and p-n junction with forward bias, reverse bias and illumination. It also explained need, working principle and solar cell parameters of solar cells. It further explained perovskite solar cell. It also demonstrated simulation of solar cells to obtained J-V characteristics and solar cell parameters using SCAPS-1D.



Hands on training of the second day started with Demonstration on Potentiostat Electrochemical by Miss. P. S. Pawar, (Research Scholar, YCIS, Satara) Miss. M. M. Faras, (Research Scholar, YCIS, Satara).

Second session was carried out by . Miss. S.M. Nikam, Research Scholar, YCIS, Satara. In that she gave a demonstration on electro-spinning. In that session, she gave basic information about the electro-spinning technique and likewise types of collectors and the effect of parameters such as voltage, and solution concentration, the distance between the collector and the tip of the syringe. She showed a demonstration of electro-spinning for the synthesis of nanofibers and also explained the various application of nanofibers.



Last two training were carried out on UV visible spectroscopy and IR spectroscopy by Mr. V. L. Shinde (Research Scholar, YCIS, Satara) and Mr. A.A. Survase (Research Scholar, YCIS, Satara)

