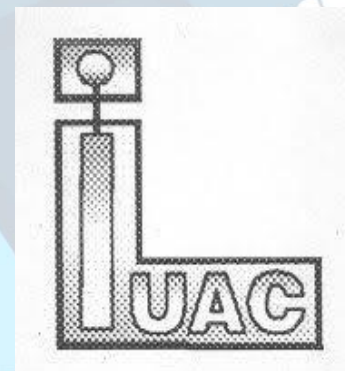


FUNDED PROJECTS

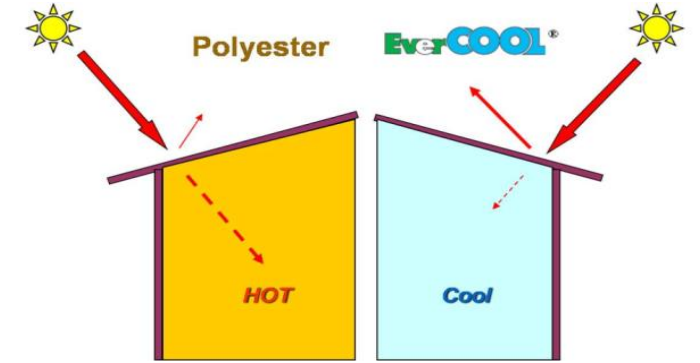
SPONSORED RESEARCH PROJECTS



MINISTRY OF ENVIRONMENT AND FOREST, GOVT. OF INDIA



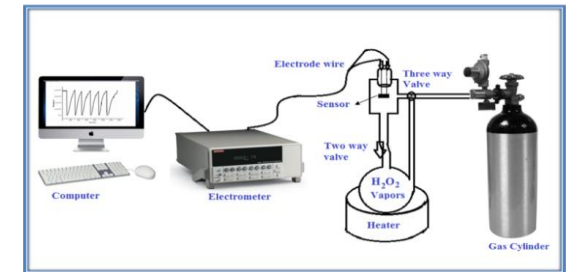
Modification of materials for their Use as Reflective Material in NIR Reflective Coatings for Energy Efficient Buildings



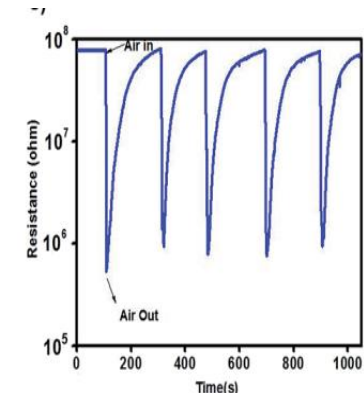
Cool Coatings for Energy Efficient Building



Conducting Polymer Nanocomposites as Sensors for Detection of Explosives



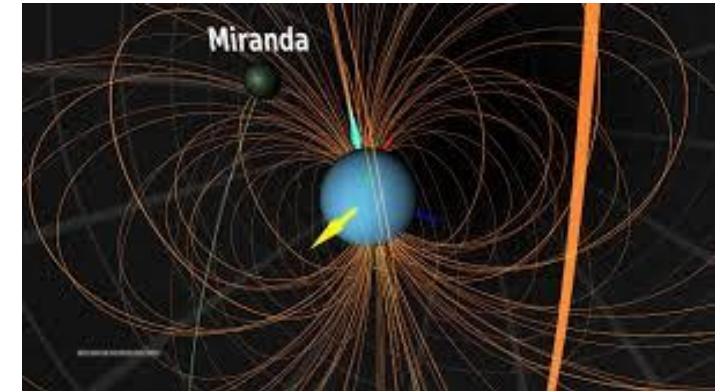
High Power Laser Absorption and Penetration in Metal Targets.



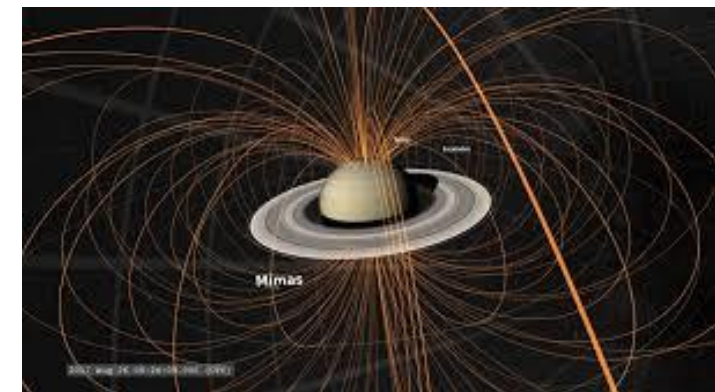


INDIAN SPACE RESEARCH ORGANISATION

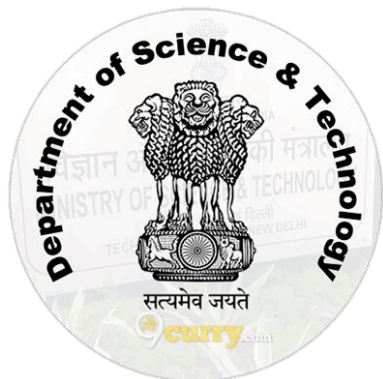
Interaction of electromagnetic wave with high energetic plasma in Uranus



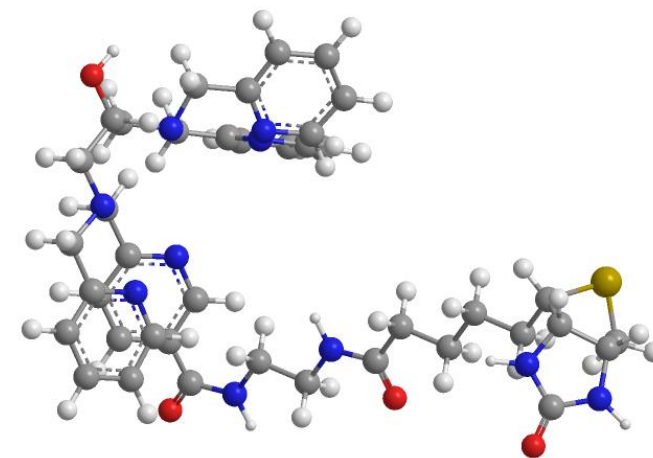
Study of low frequency plasma waves in the magnetosphere of Saturn



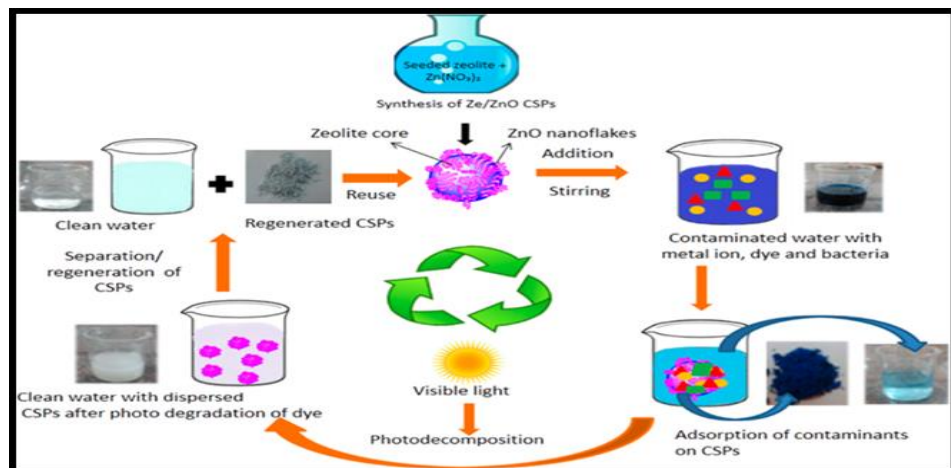
PROJECTS FUNDED BY DST-SERB



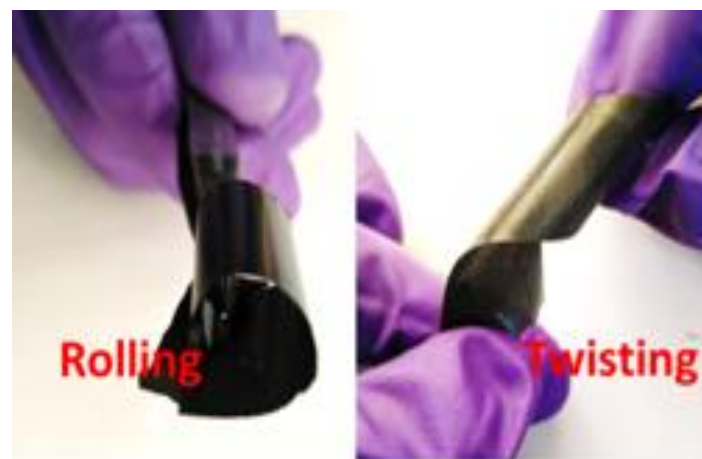
Immunosensors for Low Density Lipoprotein (LDL) detection



Development of Smart Materials for Rapid and Sustainable Water Treatment



Hand held Devices for selective Detection of Explosives



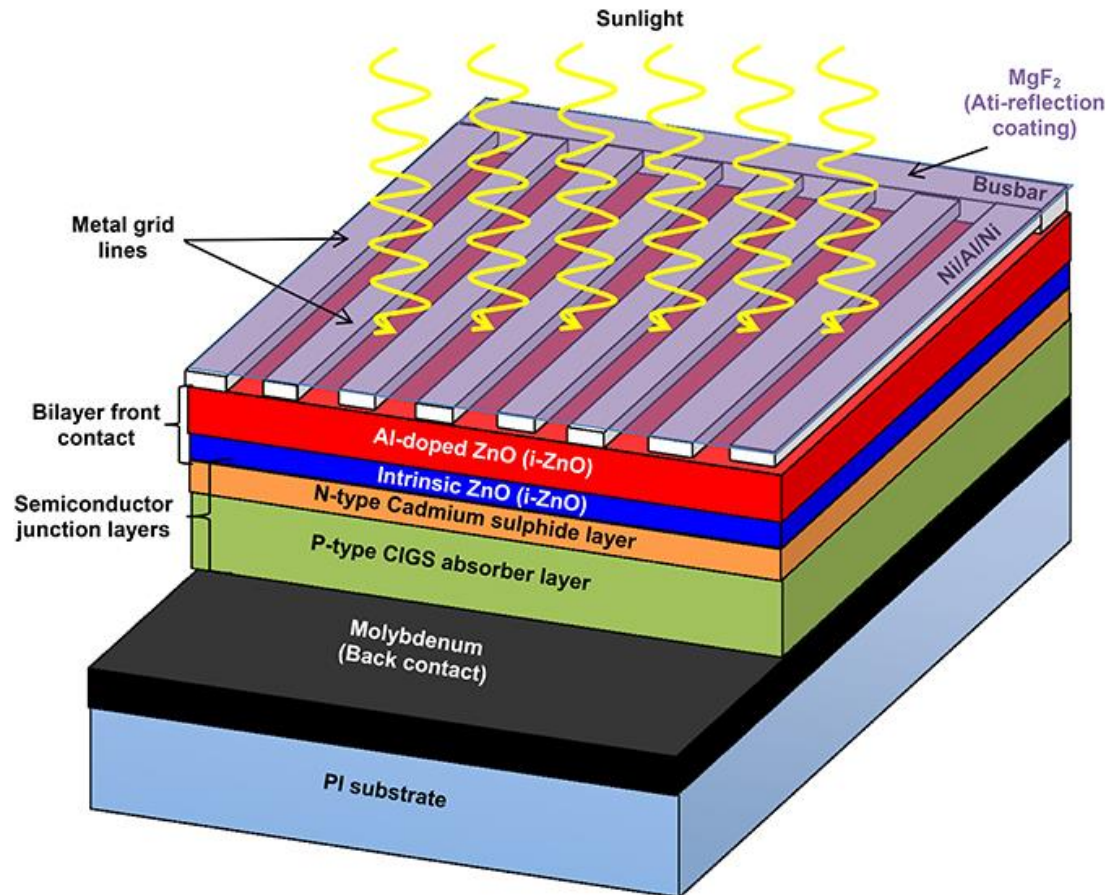


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सत्यमेव जयते

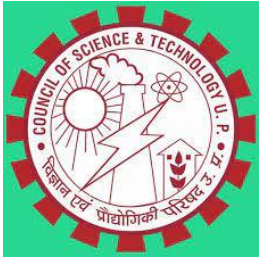
PROJECTS FUNDED BY DST-SERB

Modification in the chemical bath deposition setup, growth and characterization of semiconducting thin films for photovoltaic applications

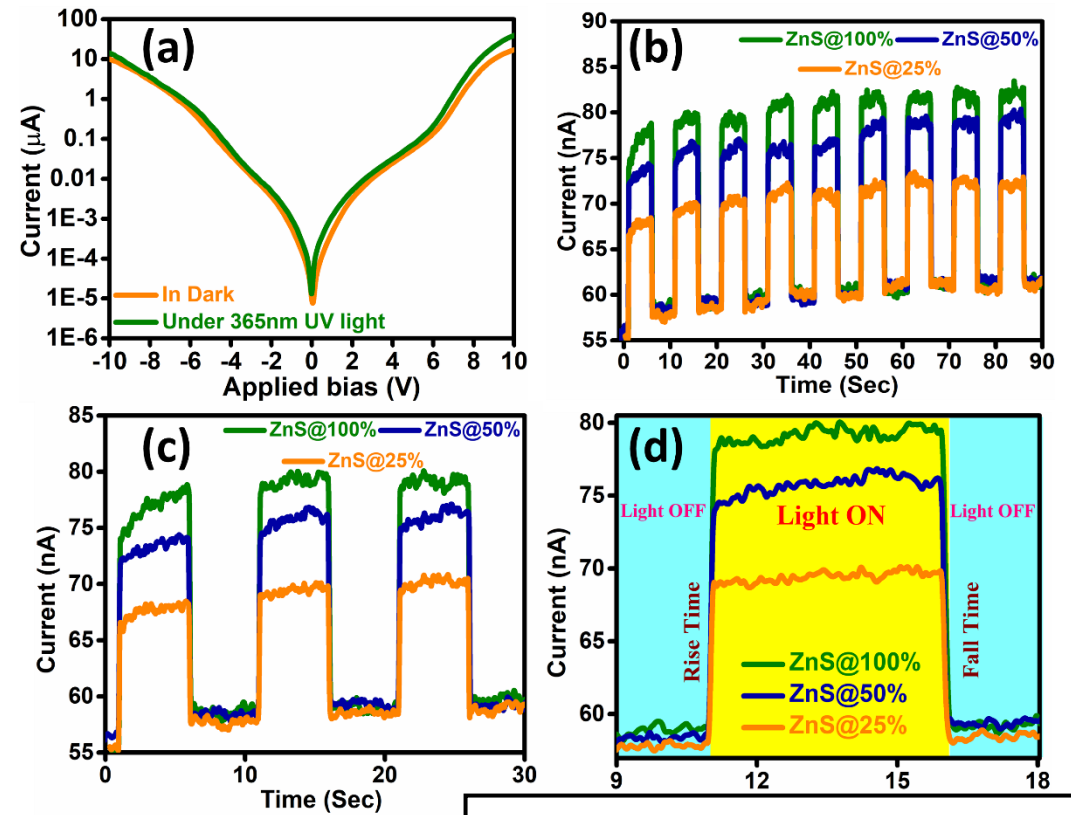
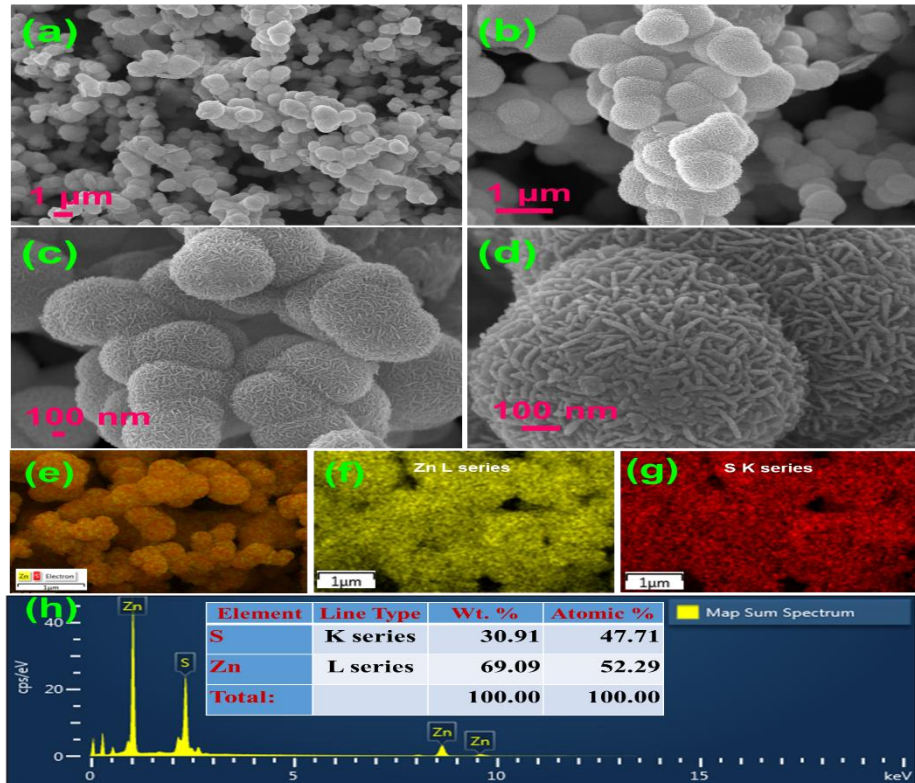


- ❖ Total Project Cost: 23,52,000/-
- ❖ Project duration: 3 Years

PROJECTS FUNDED BY CST



Fabrication of low-cost Visible/ultraviolet sensor based on ZnS/p-Si heterojunction grown by chemical bath deposition



❖ **Total Project Cost: 9,94,000/-**
 ❖ **Project duration: 3.5 Years**



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Development of lead free pyroelectric ceramic based mid-IR sensor for intruder detection

- Pyroelectric materials can sense the change in temperature
- Change in the temperature alters the spontaneous polarization

- Intruder alarm
- Fire alarm
- Gas analysis
- Laser sensors
- Thermal imaging
- Target recognition
- Thermal energy harvesting
- Infrared Search and Track System

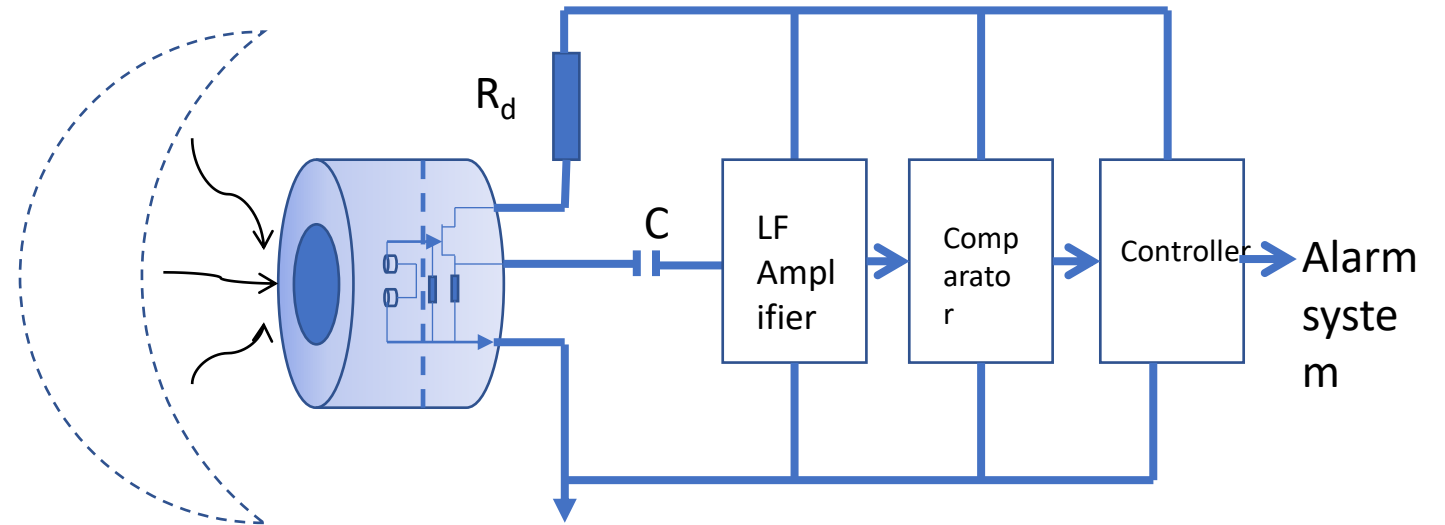
Doped BZT-A

1752 $\mu\text{Cm}^{-2}\text{K}^{-1}$

Doped BZT-B

1841 $\mu\text{Cm}^{-2}\text{K}^{-1}$

Typical IR sensor



One of the largest value of pyroelectric coefficients reported so far at RT by our group

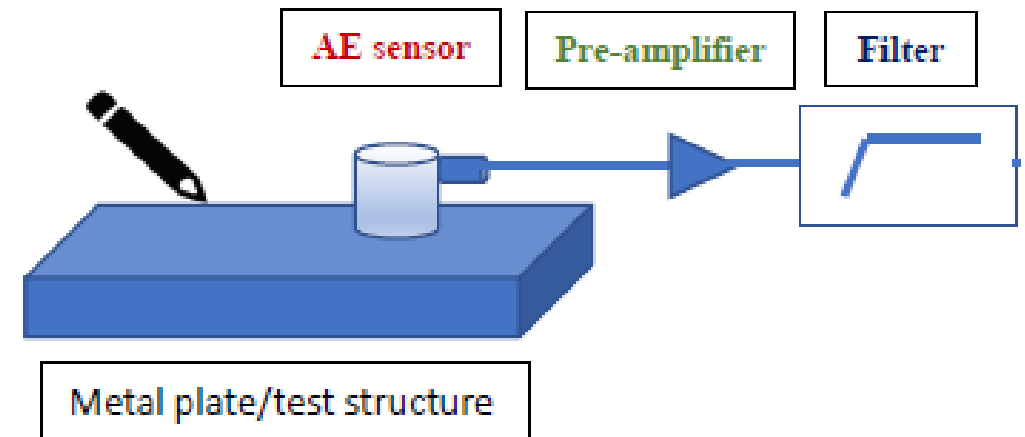
Amount: Rs. 32.85 lakhs, Duration: Three Years (Ongoing)

Development of doped barium zirconate titanate (BZT) based piezoelectric ceramics for acoustic emission sensor applications



Funded by Aeronautics Research and Development Board (ARDB), DRDO

- Development of high-quality doped $(\text{Ba,Ca})(\text{Zr,Ti})\text{O}_3$ (BCZT) piezoelectric ceramics for DMRL
- Acoustic Emission (AE) testing is mostly performed with piezoelectric elements for transduction
- Used for structural health monitoring of on-ground and in-flight aircrafts
- Monitoring the fatigue cracks, barely visible impact damage (BVID), delamination and corrosion



Amount: Rs. 24.90 lakhs, Duration: Two and half years (September 2021)

TARE(Teacher's Associate Research Excellence)

Project with Department of Science & Technology(DST)

Project Scheme: TARE(Teacher's Associate Research Excellence)

Funding agency: SERB(DST)

Project Title: Approximation Degree of Positive Linear Operators involving
Orthogonal Polynomials


Duration of project: 36 months

Amount Sanctioned: Rs.18,30,000/-

Broad Area of research: Approximation Theory



Science and Engineering Research Board (SERB)
Department of Science and Technology (DST)
Govt. of India



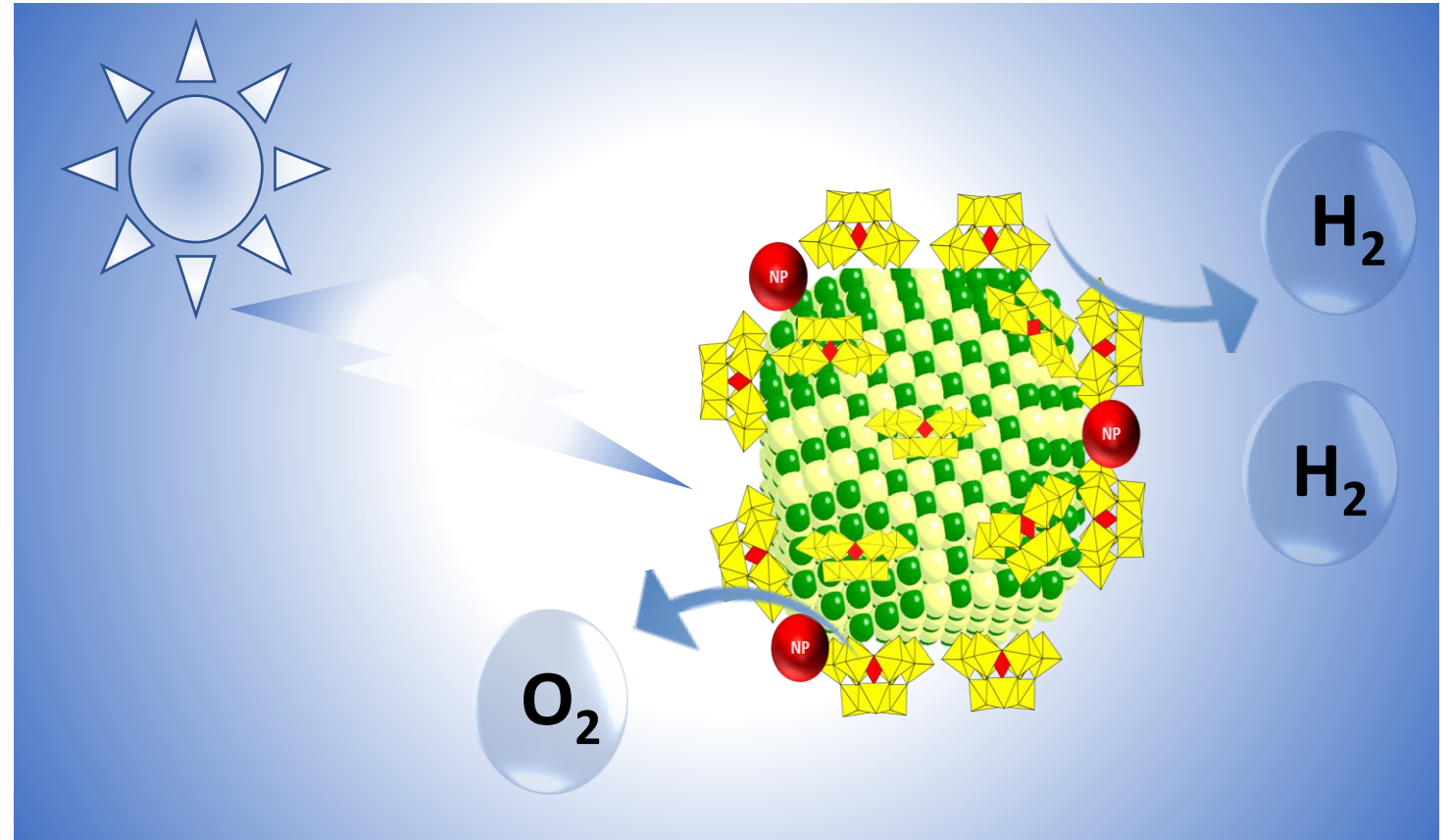
Quality Assessment of Oilseeds (Sesame) using Dielectric Spectroscopy

Funding Agency – CSTUP

The background of the slide features a blurred laboratory setting. In the foreground, a test tube is filled with water and contains a small, spiky green plant specimen. Behind it, several other test tubes are visible, some containing similar plant samples, all set against a soft, out-of-focus background of laboratory equipment and light.

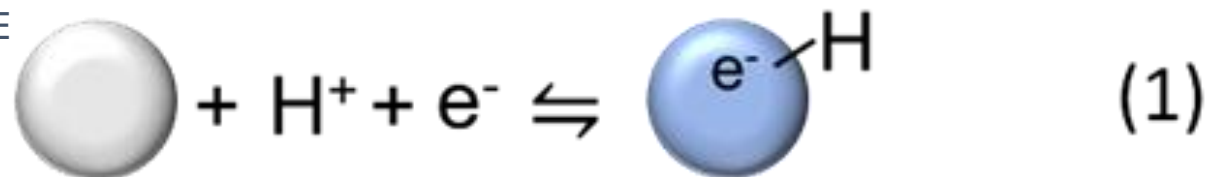
Project with Department of Science & Technology(DST)

- **Project Title:** Visible-light hybrid photocatalysts for solar energy harvesting: Synthesis and applications in photo-mediated water splitting to generate “Hydrogen” and photopolymerization of “Carbon-dioxide” into “Biodegradable Polycarbonate”.
- **Funding agency:** CSIR (Govt of India)



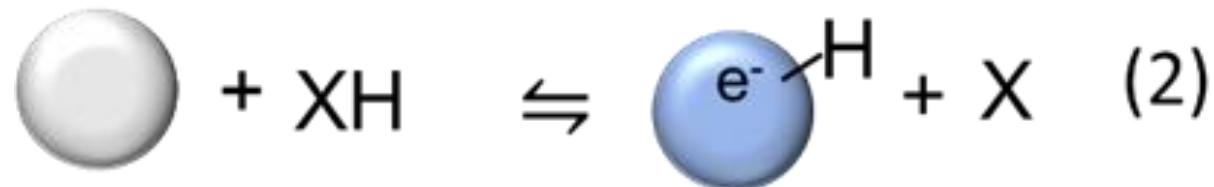
Project with Department of Science & Technology(DST)

- **PROJECT TITLE:** REACTIVITY OF COLLOIDAL METAL OXIDE SURFACES: ROLE OF HIGH ENERGY TRAP STATES AS REACTIVE INTERMEDIATES



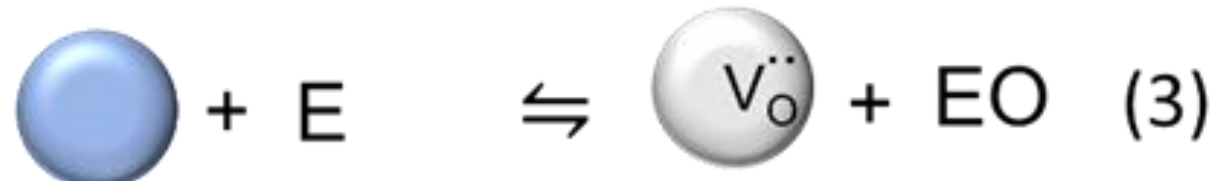
- **Funding agency:** SERB-SIRE

- **Sanctioned letter date:** 12/05/2021 (letter No. SIR/2022/000481)



- **Amount Sanctioned:** Rs.16,50,000/-

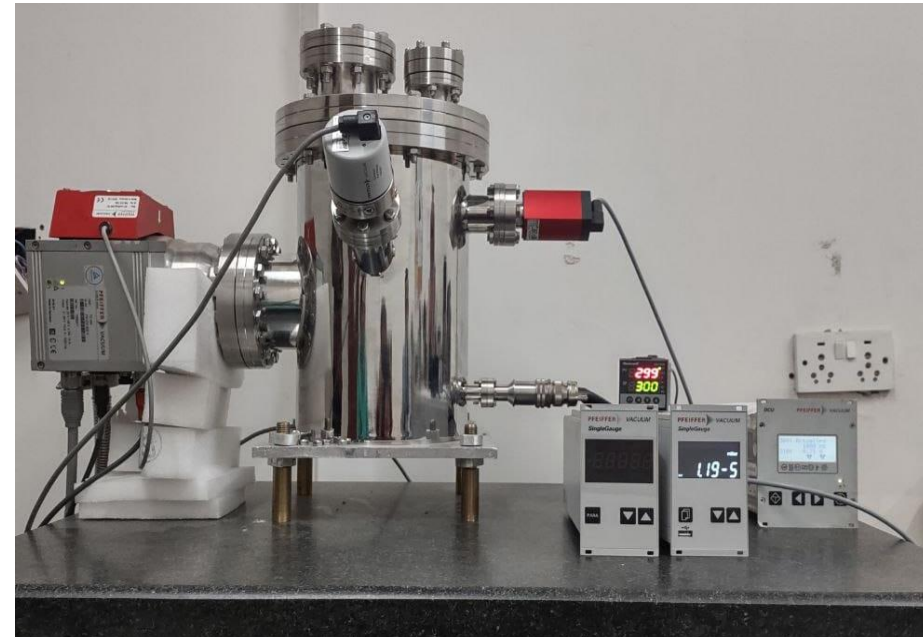
- **Project Status :** 31/03/2023



Project with Department of Science & Technology(DST)

- **Project Title:** Study of interface magnetism in thin films and multilayers
- **Funding agency:** DAE-BRNS

UHV annealing setup with optical windows



INTERNATIONAL COLLABORATIONS

INDO-HUNGARIAN PROJECT

Green synthesis of novel BiOX (X = Cl, Br, I) and BiOXs composites, their immobilization on activated carbon fibers/ceramic paper and their applications as recyclable photocatalysts

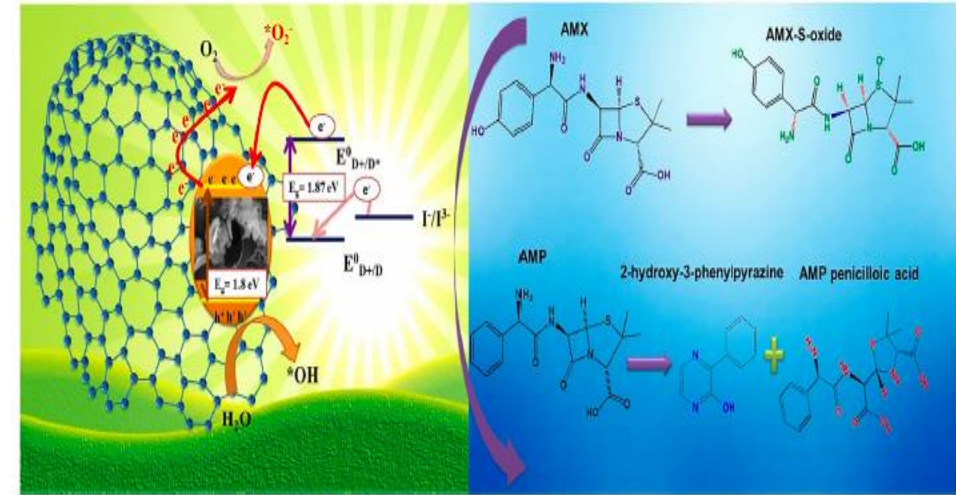


Fig. 7. Photocatalytic degradation mechanism of AMP and AMX with 1% BiOI-G-CB.

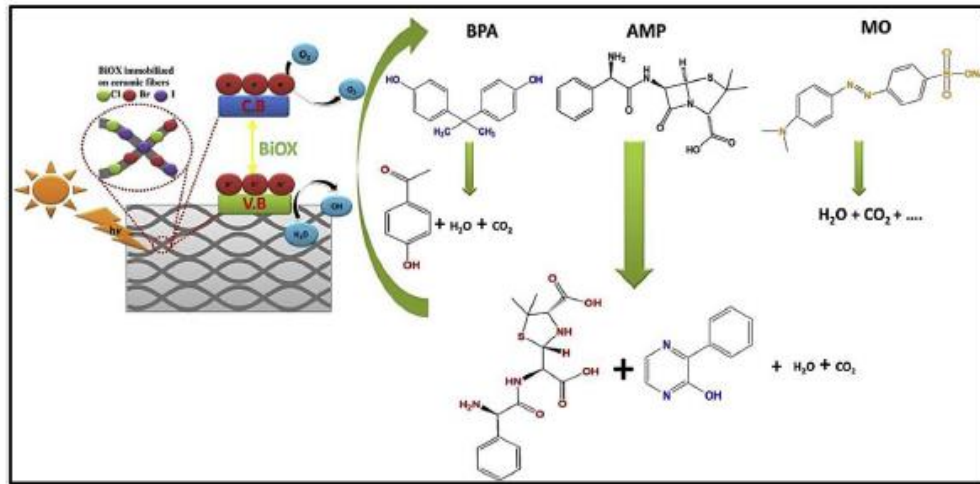
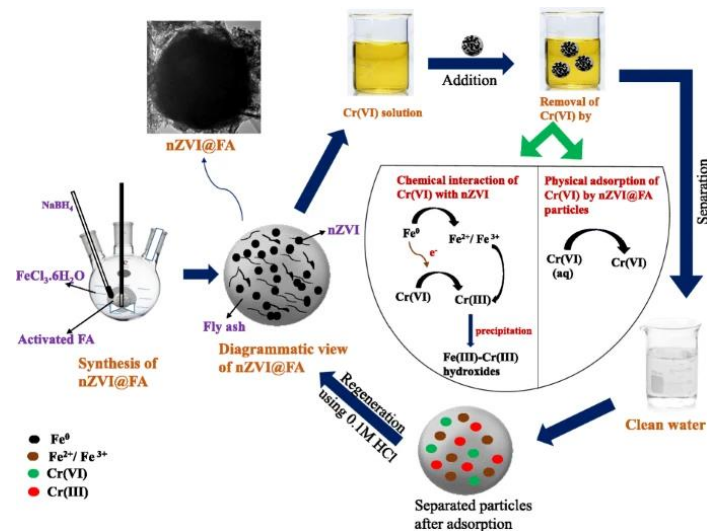


Fig. 7. Photocatalytic degradation mechanism of MO and BPA and AMP by BiOX-CerF.

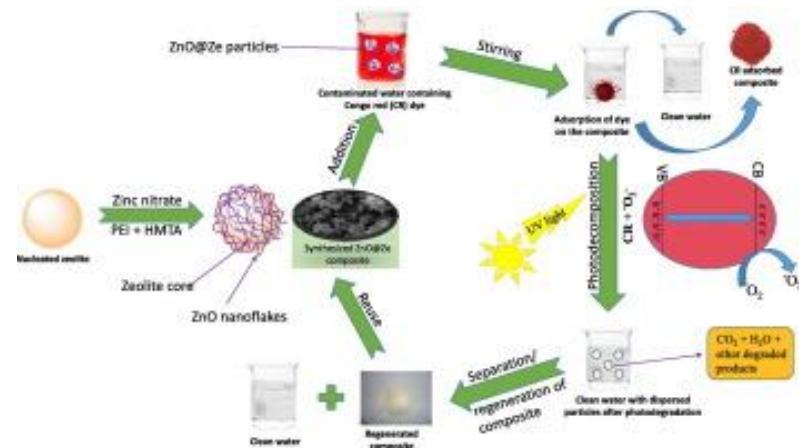


INDIA-PORTUGAL BILATERAL SCIENTIFIC AND TECHNOLOGICAL COOPERATION

- *Design and development of composite particles for rapid and sustainable water treatment*



Removal of toxic metal ions from water using nZVI(nano zero valent iron) modified fly ash composite

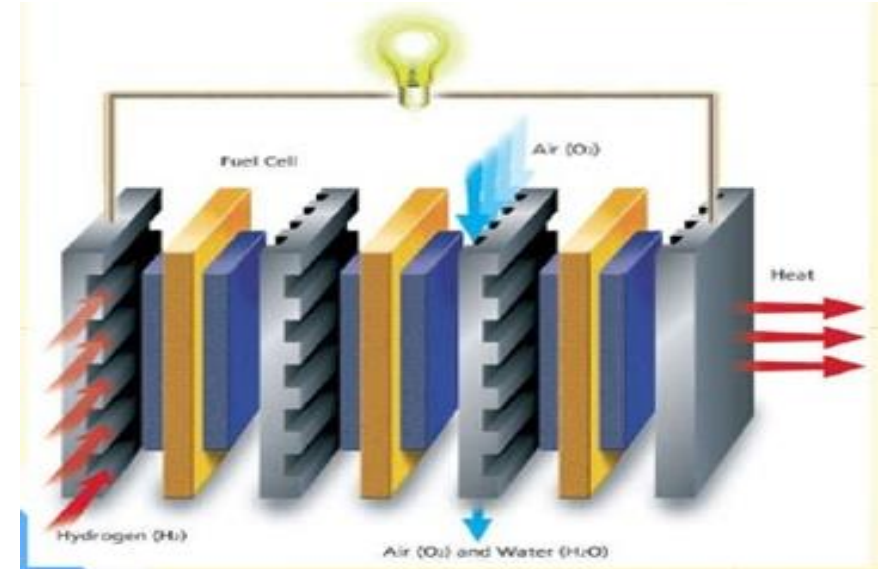
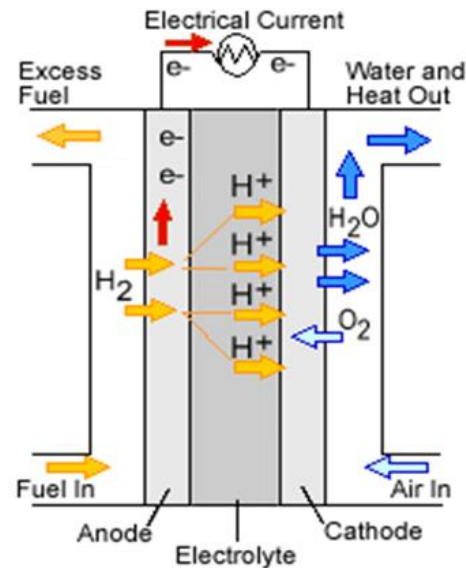
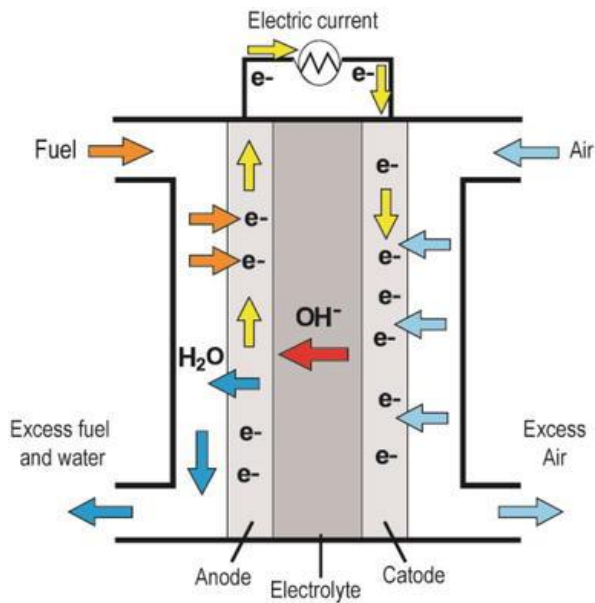


Removal of organic contaminants from waste water using ZnO modified high silica Zeolite



IAEA, AUSTRIA PROJECT

Anion Exchange Membrane (AEMs) through Radiation Induced Grafting of Polymers for Fuel Cell Applications : Towards Cleaner Energy & Environment

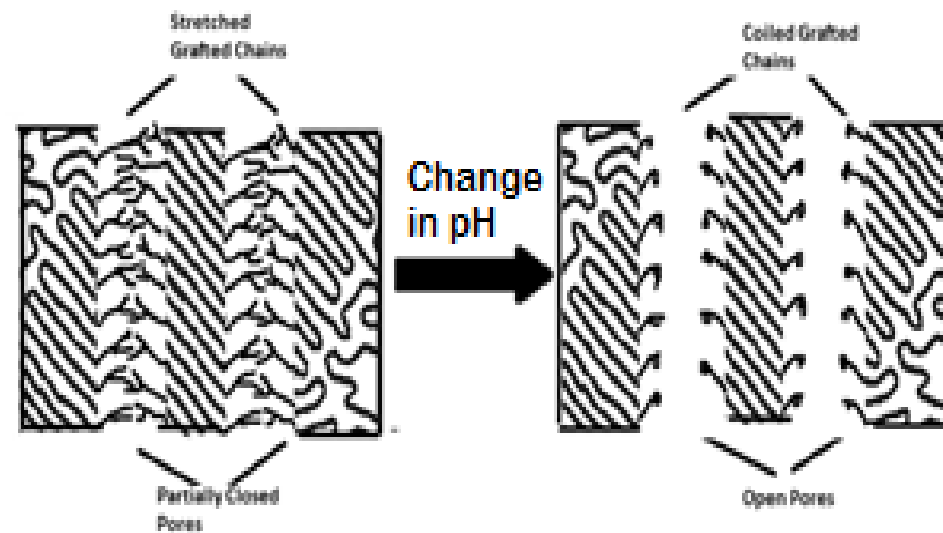




SAXS studies of the dynamics of the stimulus responsive pores in Grafted Track Etched Membranes: a new paradigm for controlled Drug Delivery Applications

DESY-GERMANY DEUTSCHES ELEKTRONEN-SYNCHROTRON

*A Research Centre Of The Helmholtz
Association, Germany*



**Pictorial Representation of On –Off Switching as a Function
of External Stimuli.**

