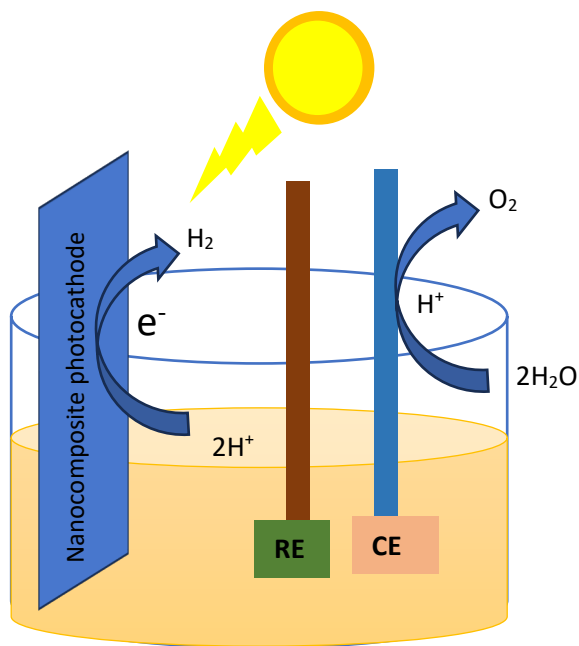


# Development of hybrid-nanocomposite-photocathode for photoelectrochemical hydrogen generation through water splitting

## Graphical Abstract/ Layout



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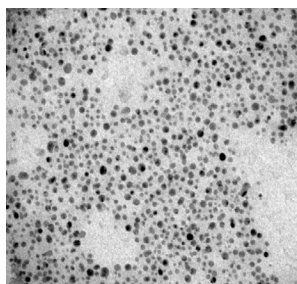


### Project Description:

The most promising and emerging technology in the quest of clean fuel production through renewable source is photoelectrochemical (PEC) process. Though, this methodology is well established from late 1970's, large scale commercialization is yet a major concern. The higher solar to hydrogen conversion (STH), efficient charge transfer and high stability are some of the benchmark research interests. In concern to address this, we aim to develop a hybrid nanostructure constituting the 2D material-based quantum dots with metal and magnetic/mie resonant nanoparticles. Among the 2D materials, the boron nitride as a rising star can enhance the charge separation, in addition, the metal and mie resonators will act as efficient solar harvesters. Our hybrid nanostructures will yield the good STH with promising photostability. Further, we believe that this hybrid will contribute in the development of efficient hydrogen evolution.

### Products/ Instruments/ Results/ Outreach Activities (Pictures)

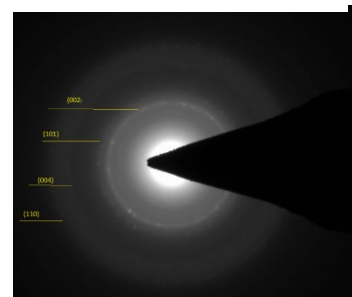
HR-TEM image



CH instrument



SAED pattern



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**Name of the Funding Agency**  
Department of Science and Technology  
(DST)

**Name of the Scheme**  
Science & Engineering Research Board  
(SERB)

**Sanctioned Amount (in Rupees)**  
Rs. 23,10,000

**Duration of the Project (years)**  
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