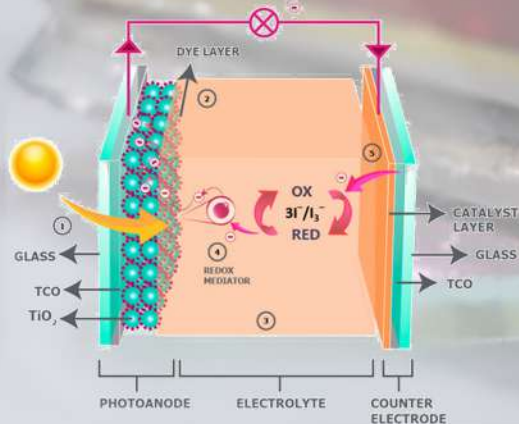


# DYE-SENSITIZED INDOOR/AMBIENT LIGHT HARVESTERS

## LIGHT RECYCLING LEADING TO SELF-POWERED IoTS & BATTERY-FREE WORLD

Capturing and recycling all kinds of light (indoor and outdoor) to realize self-powered devices is our goal in the expertise area of third-generation molecular light-harvesting technology - Dye sensitized indoor light harvesters/Dye cells (DSCs). Conventional solar technologies are too bulky, rigid, or inefficient for use in remote/indoor locations under artificial lighting. The significant interest in DSCs is also related to the ease of sourcing materials used for its fabrication and the possibility of indigenous manufacturing and recycling. DSCs already proved to be the best technology for harvesting energy from indoor/ambient lighting with efficiencies above 35%. Indoor photovoltaics is predicted to achieve a market of \$850 million by the end of 2023.



Indoor Photovoltaics for self-powered IoTs



Indigenous DSC Module Fabrication Facility at CSIR-NIIST

## IMPORTANCE/INNOVATIVENESS

- With 15 billion primary batteries disposed annually, we are polluting more than 0.3 million sq. km's of land.
- Replacing batteries not only reduces the carbon footprint but also lowers the volume of mined raw materials thereby improving the entire value chain.
- Dye-sensitized indoor light harvesters can be recycled more efficiently than batteries making a greener and sustainable living.

## NIIST Achievements/TECHNOLOGY DESCRIPTION

- ⚡ Achieved 'Indigenization' in developing equipment's for indoor photovoltaic devices with 60-70% cost reduction.
- 🌱 Developed end-to-end decentralized ecosystem and supply chain leading to import substitution.
- ⚡ Successfully introduced indoor light harvesting DSCs with efficiencies >40%.
- 🌱 Aligning with GOI initiatives: "Make in India" "Aatmanirbhar Bharat" "Make for World".

Advanced  
R&D



Turnkey  
Solutions



Innovative  
Applications



## What we offer:

- ⚡ Technical support towards setting up pilot production lines.
- 🌱 Collaboration opportunities with industries to develop products.



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