

# International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India



## Semi-transparent and Multicolour Perovskite Solar Cells

### Overview

Perovskite solar cells based on metal halide perovskite absorber layer have emerged as a cost-efficient way of solar to electric energy conversion. By using low-temperature solution processing technique and screen printing approach, semi-transparent and multi-colour PSCs are fabricated on rigid and flexible substrates. Circumventing the need of hole transporting material through material engineering improved the visible light transmittance. The advancement in the low temperature fabrication of this novel solar cell concept has a significant impact on the system cost.

### Key Features

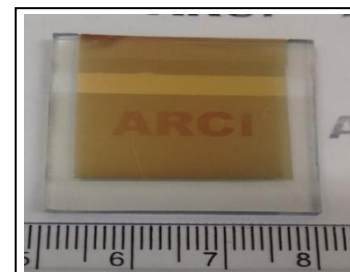
- Non-vacuum and solution processable
- Tunable colour and visible light transmittance
- Light weight and flexible
- Scalable manufacturing process

### Potential Applications

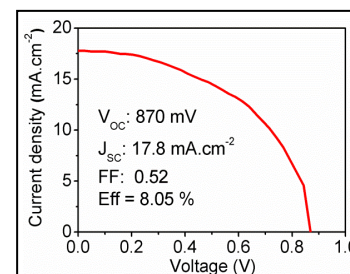
- Building integrated photovoltaics (roof, smart window, tile)
- Automobile (auxiliary power generation)
- Off-grid power generation

### Intellectual Property Development Indices (IPDI)

- Performance and stability are validated at laboratory scale
- Scale-up and prototype module fabrication underway



Digital photograph of solution processed prototype PSCs



Performance characteristic of solution processed prototype PSCs

Status	1	2	3	4	5	6	7	8	9	10

### Major Patents/Publications

1. Effect of hole transporting materials on the photovoltaic performance and stability of ambient-processed solar cells, Journal of Energy Chemistry (2017)
2. Seed layer assisted low-temperature solution growth of 3D ZnO nanowall architecture for hybrid solar cells, Materials and Design (2017)

### Centre for Solar Energy Materials (CSEM)

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