

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

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



## Easy to clean coatings along with high optical transmittance and high weather stability

### Overview

Easy to clean coating technology is generally related to protect the solar devices from dust/dirt, corrosion and all sorts of weather conditions. Reflectors and receiver tubes employed in CSP application and PV panels are very important solar devices traditionally mounted outdoors on rooftops or in wide open spaces where they can maximize their exposure to sunlight. Unfortunately, this type of outdoor placement of the devices is subjected to substantially constant weather and moisture exposure. Due to this constant and extended exposure to the devices are preferably designed for using many years of stable and reliable operation without failure due to moisture damage. A general challenge in finding the suitable protective coating material with easy to clean property for use with above mentioned devices is finding one protecting surface that has best-in-class qualities for the multifunctional properties desired in all sorts of environmental protections. This new technology will provide solution for the above mentioned issues.

### Key Features

- Low cost production
- Optical property: <1% Transmission or reflection loss or equal to the actual optical property of the substrate.
- Super hydrophobic property: > 100° water contact angle
- Good UV, weather and mechanical stability

### Potential Applications

- PV panels & Reflectors employed in CSP
- Optical lenses
- Video display panels
- Architectural glasses
- Textiles
- Plastic & concrete surfaces

### Intellectual Property Development Indices (IPDI)

- Performance and stability are validated at laboratory scale
- Scale up of coating, sol preparation and coating development is completed
- Prototype module fabrication & testing are under way

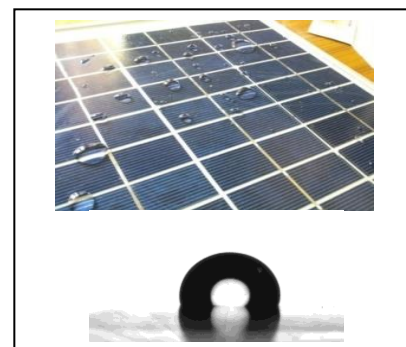
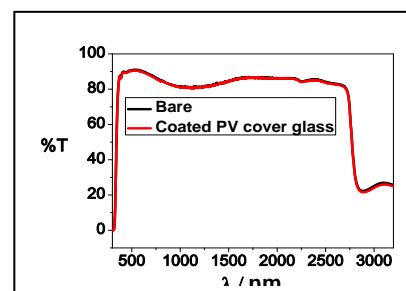


Image of coated PV panel & water contact angle measurement



Optical transmittance of coated PV cover glass compared with bare

Status	1	2	3	4	5	6	7	8	9	10

### Major Patents/Publications

1. Indian patent Application no. 402/DEL/2014, date of filing: 13.02.2014.

### Centre for Solar Energy Materials (CSEM)

ARCI, Balapur PO., Hyderabad 500005, Telangana, India

Tel : +91 40 24452454; Fax : +91 40 24442699

Email: ssakhivel [at] arci [dot] res [dot] in / tata [at] arci [dot] res [dot] in