

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

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



High temperature stable solar absorber tubes for concentrated solar thermal power (CSP) application

Overview

Solar collectors are very important devices for increasing energy efficiency in concentrated solar thermal power (CSP) such as steam generation for various industrial applications and power generation. High temperature stable solar absorber coating plays an important role in solar collectors particularly suitable for high temperature CSP application. For such application, coatings are required in large area and generation of solar receiver tubes by an economic way is one main objective to reduce the cost of power generation from solar energy.

Key Features

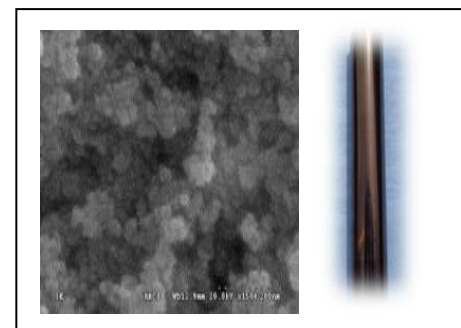
- Cost effective
- High optical properties (solar absorptance: 95-96 % and thermal emittance: <0.20 (at 500°C)
- Temperature of operation: <500°C
- Good mechanical and weather stability

Potential Applications

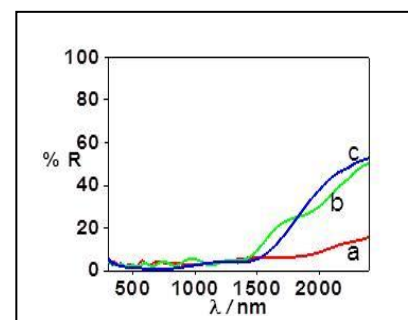
- Steam generation for various industrial applications
- Power generation
- Solar water heater /Solar dryer
- Solar desalination

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



FE-SEM morphology of nanocomposite absorber layer & Image of absorber tube



Solar absorptance of single (a) and two layer tandem absorber (b & c)

Status	1	2	3	4	5	6	7	8	9	10

Major Patents/Publications

1. Indian patent Application no. 1111/DEL/2015, date of filing: 22.04.15

Centre for Solar Energy Materials (CSEM)

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

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

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