

# Greater Specular Reflectance for ORC Collector and Optical Materials (CSP-3)



A joint India-U.S. research consortium funded under the Joint Clean Energy Research & Development Center (JCERDC)

## Scientific Achievement:

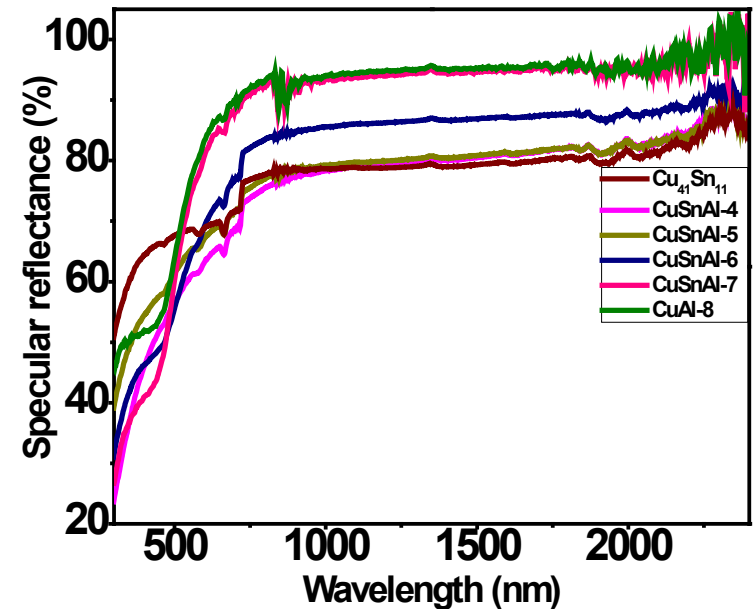
Demonstrated the new alloy design approach involving substitution of Sn by Al in Cu-Sn-based single-phase  $\text{Cu}_{41}\text{Sn}_{11}$  alloy to enhance the specular reflectance property. In particular, bulk Cu-Sn-Al intermetallic alloy-based solar reflectors with 80%–83 % specular reflectance were developed (see figure).

## Significance and Impact:

Newly developed Cu-Al alloys exhibit even superior specular and solar reflectance property than many of the earlier investigated multilayer reflective coatings or other commercial reflectors.

## Research Details:

- Conventional metallurgical processing approach of arc melting followed by suction casting can develop the presently investigated solar reflectors with nanoscale roughness, together with good hardness property and uniform microstructure.
- Newly developed Cu-Al alloys exhibit even superior specular and solar reflectance property than many of the earlier investigated multilayer reflective coatings or other commercial reflectors.



Specular reflectance of 80%–83% for bulk Cu-Al alloys.

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**Contacts:** [kamanio@materials.iisc.ernet.in](mailto:kamanio@materials.iisc.ernet.in) & [bikram@mrc.iisc.ernet.in](mailto:bikram@mrc.iisc.ernet.in)