



TECHNOLOGY READINESS LEVEL: 5

KEY ELEMENTS HAVE BEEN DEMONSTRATED IN RELEVANT ENVIRONMENTS.

US PATENT # 6,329,296

JAPAN PATENT # 3,855,105

EUROPE PATENT # 1,316,115

TECHNOLOGY SUMMARY

Sandia National Laboratories has created a technology that produces an antireflective (matte) surface on a silicon photovoltaic solar cell. The process uses a randomly deposited metal catalyst followed by reactive ion etching (RIE) to produce nanoscale surface features. The texture cells are more effective in absorbing solar energy. This nanoscale texturing is also a cost effective and environmentally safe tool for a renewable energy source.

The subwavelength (nanoscale) roughness presents a gradual interface between the air and the photovoltaic cell which reduces reflection loss, for high overall solar energy collection efficiency. In contrast to a chlorine-based etch process, this nanoscale texturing process is a cost effective alternative that uses nontoxic materials.



POTENTIAL APPLICATIONS

- Multicrystalline Silicon Solar cells
- Antireflective surface

TECHNOLOGICAL BENEFITS

- Cost-effective
- "Green" technology
- Renewable energy
- Process is non-toxic

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

[**ip@sandia.gov**](mailto:ip@sandia.gov)

Refer to SD # 6442

or visit

[**https://ip.sandia.gov**](https://ip.sandia.gov)