



Techniques of Nanoscale Silicon Texturing of Solar Cells

BENEFITS

- Cost effective
- “Green” technology
- Renewable energy
- Process is non-toxic

APPLICATIONS

- Multicrystalline Silicon Solar cells
- Antireflective surface

PATENTS ISSUED

- 6329296 (US)
- 3855105 (Japan)
- 1316115 (Europe)

SANDIA DISCLOSURE

- 6442.0
- 6442.1
- 6442.2
- 6442.3

INTELLECTUAL PROPERTY & LICENSING CONTACT

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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.



Technology Readiness Level:

Sandia estimates this technology at a TRL 5. Key elements have been demonstrated in relevant environments.

Licensing & Partnering Status:

Various license and partnering options are available. Please contact the Intellectual Property department to discuss.



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SAND #2010-0387P



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