



Sandia National Laboratories

High Efficiency Multiple-Junction Solar Cells

POTENTIAL MARKET APPLICATIONS

Satellite Space Power Systems

Military and Commercial Solar Cells

Concentrated Solar Power

BENEFITS

Reduces Satellite Mass and Cell Array Size

Reduces Launch and Maintenance Costs

Increases Satellite Mission Lifetime

High Efficiency of Light to Energy Conversion

Eliminates Restrictions of Electrical Current Flow

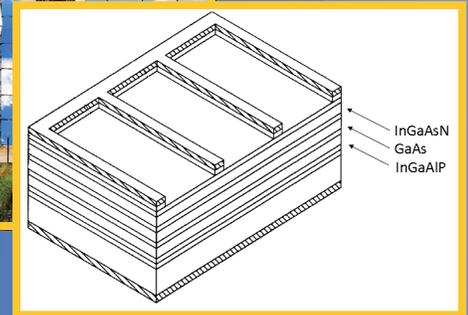
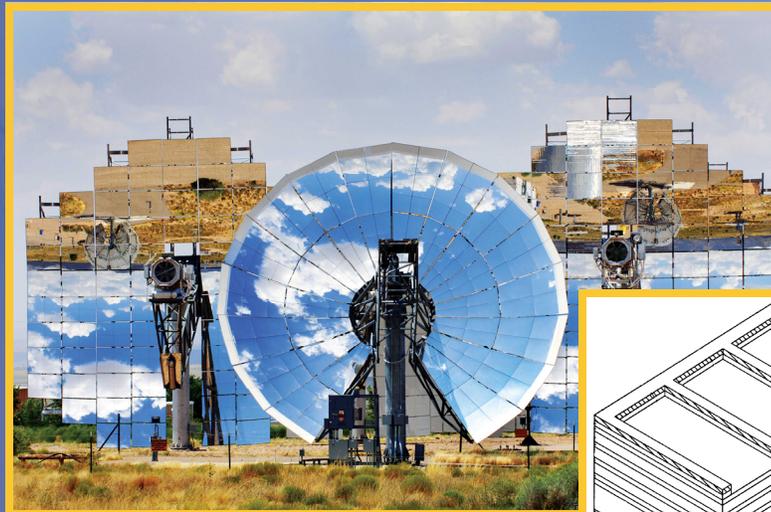
Captures Energy in Each Spectral Region

INTELLECTUAL PROPERTY

US PATENT # 5944913 (SD # 6087)

TECHNOLOGY SUMMARY

Single junction solar cells have limited efficiency and fail to extract maximum energy from photons outside of a specific spectral region. Higher efficiency and optical to electrical energy conversion is achieved by stacking semiconductor p-n junction layers to capture energy from all spectral regions. This Sandia invention proposes growing layers of different semiconductor alloys on a semiconductor substrate to minimize band-gap energy loss providing a high efficiency multiple-junction solar cell array.



TECHNOLOGY READINESS LEVEL

Sandia estimates this technology at approximately a TRL 3. Critical functions and concepts have been proven in a laboratory setting.

LICENSING EXECUTIVE

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Sandia National Laboratories

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