



Low Cost High Efficiency InP-Based Solar Cells

**Cooperative Research and Development
Final Report**

CRADA Number: CRD-09-344

NREL Technical Contact: Mark Wanlass

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

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Cooperative Research and Development Final Report

In accordance with Requirements set forth in Article XI.A(3) of the CRADA document, this document is the final CRADA report, including a list of Subject Inventions, to be forwarded to the Office of Science and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

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CRADA Title: Low Cost High Efficiency InP-Based Solar Cells

Parties to the Agreement: MicroLink Devices

Joint Work Statement Funding Table showing DOE commitment:

Estimated Costs	NREL Shared Resources
Year 1	\$ 00.00
Year 2	\$ 00.00
Year 3	\$ 00.00
TOTALS	\$ 00.00

Abstract of CRADA work: NREL will develop a method of growing and fabricating single junction InP solar cells on 2-inch InP substrates on which a release layer has been deposited by MicroLink Devices. NREL will transfer to MicroLink the details of the InP solar cell layer structure and test results in order that the 2-inch results can be replicated on 4-inch InP substrates. NREL will develop a method of growing and fabricating single junction InP solar cells, including a metamorphic layer, on 2-inch GaAs substrates on which a release layer has been deposited by MicroLink Devices. NREL will transfer to MicroLink the details of the InP solar cell layer structure and test results in order that the 2-inch results can be replicated on 6-inch GaAs substrates. NREL will perform characterization measurements of the solar cells, including I-V and quantum efficiency measurements at AM1.5 1-sun.

Summary of Research Results: NREL designed, developed, and tested InP-based solar cell structures for this program. Baseline device structures were grown on InP substrates to facilitate cell design development and to establish PV performance parameters. Mature designs were then used to grow cell structures on InP substrates with pre-deposited release layers that were supplied by MicroLink. The collaboration was highly successful. A series of 5 reports were prepared from this work by the NREL P. I. (Wanlass) that outlined the progress made and the technical details.

Subject Inventions Listing: None

Report Date: 5/30/12

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