NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Inks for Ink Jet Printed Contacts for High Performance Silicon Solar Cells

Cooperative Research and Development Final Report

CRADA Number: CRD-06-199

NREL Technical Contact: David Ginley

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.

CRADA Report
NREL/TP-7A10-55050
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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.

CRADA Number: **CRD-06-199**

CRADA Title: Inks for Ink Jet Printed Contacts for High Performance Silicon Solar Cells

Parties to the Agreement: BP Solar International, Inc.

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:

The work under the proposed CRADA will be a joint effort by BP Solar and NREL to develop new types of high performance inks for high quality contacts to silicon solar cells. NREL will develop inks that have electronic properties that will allow the formation of high quality ohmic contacts to n- and p-type crystalline silicon, and BP Solar will evaluate these contacts in test contact structures.

Summary of Research Results:

NREL developed dopant inks and pastes based on B, Al, P, and Sb. The inks were sprayed on Si wafers by BP Solar and NREL, and then laser processed by BP Solar to produce highly doped contacts. The higher viscosity pastes were screen printed by BP Solar, and then laser processed to produce highly doped contacts to Si wafers. At the completion of the CRADA, the project had produced Si wafer-based test cells with good conversion efficiencies using NREL-prepared dopant materials and laser processing.

Subject Inventions Listing:

US Patent Application: Dopant Compositions and the Method of Making From Doped Regions in Semiconductor Materials (filed August 2012)

Report Date: 10-26-12 **Responsible Technical Contact at Alliance/NREL**: David Ginley

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