



Stability and Quench Protection for HTS Superconducting Magnets

Cooperative Research and Development
Final Report

CRADA Number: CRD-05-00160

NREL Technical Contact: David S. Ginley

CRADA Report
NREL/TP-7A1-48415
July 2010

NREL is operated for DOE by the Alliance for Sustainable Energy, LLC

Contract No. DE-AC36-08-GO28308



NOTICE

This report was prepared as an account of work sponsored by an agency of the United States government. Neither the United States government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States government or any agency thereof.

Available electronically at <http://www.osti.gov/bridge>

Available for a processing fee to U.S. Department of Energy and its contractors, in paper, from:

U.S. Department of Energy
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831-0062
phone: 865.576.8401
fax: 865.576.5728
email: <mailto:reports@adonis.osti.gov>

Available for sale to the public, in paper, from:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
phone: 800.553.6847
fax: 703.605.6900
email: orders@ntis.fedworld.gov
online ordering: <http://www.ntis.gov/ordering.htm>



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-05-00160

CRADA Title: Stability and Quench Protection for HTS Superconducting Magnets

Parties to the Agreement: CeramPhysics, Inc. + NREL

Joint Work Statement Funding Table showing DOE commitment:

Estimated Costs	NREL Shared Resources
Year 1	\$ 150,000.00
Year 2	\$ 25,000.00
Year 3	\$ 00.00
TOTALS	\$ 175,000.00

Abstract of CRADA work:

NREL will perform deposition and testing of various dielectrics on high-temperature superconductors.

Summary of Research Results:

Pure ZnO was deposited and annealed (< 400 °C) on short lengths of Cu and on glass for reference by sputtering and by pulsed laser deposition. Film quality was determined by a combination of XRD, 4-point probe, and surface morphology. If films were not sufficiently insulating, they were annealed in oxygen below 400 °C to reduce doping. If it was still not adequate, substitutionally doped films (Mg, Cu, N) were investigated to increase the insulating properties. Coated samples were delivered to Participant for further evaluation, including films of two different lengths on two glass slides for thermal measurements.

Subject Inventions listing: None.

Report Date: 3/1/10

Responsible Technical Contact at Alliance/NREL: Ginley, David S.

This document contains NO confidential, protectable, or proprietary information.