**ABSTRACT**

The views, opinions and/or findings contained in this report are those of the author(s) and should not contrived as an official Department of the Army position, policy or decision, unless so designated by other documentation.
INVESTIGATOR(S):

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Report Date: 17-Jan-2018
Date Received: 05-Jan-2018
Final Report for Period Beginning 18-Apr-2016 and Ending 17-Oct-2017
Title: Acquisition of a MPMS EverCool System for Characterization of Nanoscale Magnets
Begin Performance Period: 18-Apr-2016
End Performance Period: 17-Oct-2017
Report Term: 0-Other
Submitted By: Ph.D Ping Liu
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Distribution Statement: 1-Approved for public release; distribution is unlimited.

STEM Degrees: 1
STEM Participants: 2

Major Goals: This grant was for acquisition of a physical property measurement system from Quantum Design Company, California.

Accomplishments: The rapid increase of liquid helium cost has led to a reduction in our research and innovation capacity in the past decade. We appreciate DURIP funding for providing us to purchase a recycled magnetometer. The newly installed PPMS DynaCool employs a unique He-based gas flow control system that gives rapid temperature cycling and accurate temperature and magnetic field control.

Major parameters of the measurements:
Temperature range of 1.8 K – 1000 K
9 Tesla max. field
VSM and ACMS sensitivity < 10-6 emu with 1 sec averaging
AC Resistivity option available.
The instrument currently is being used to study the magnetic and electric properties of various materials.

Training Opportunities: Nothing to Report

Results Dissemination: Nothing to Report

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

PARTICIPANTS:

Participant Type: Co-Investigator
Participant: Jeotikanta Mohapatra
Person Months Worked: 6.00

Funding Support:
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:
Final Report

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Major parameters of the measurements:

- Temperature range of 1.8 K – 1000 K
- 9 Tesla max. field
- VSM and ACMS sensitivity < 10⁻⁶ emu with 1 sec averaging
- AC Resistivity option available.

The instrument currently is being used to study the magnetic and electric properties of various materials (Photo attached).