TO: Debbie Delmore, OSU Research Office

FROM: Dr. Skip Rochefort, School of Chemical, Biological, and Environmental Engineering

DATE: December 12, 2013

Re: Final Report for RERF Equipment Grant: TA Instruments Differential Scanning Calorimeter (DSC Model Q2000) and Thermogravimetric Analyzer (TGA Model Q800)

The grant was for the purchase of thermal characterization equipment (TA Instruments DSC Model Q2000 and TGA Model Q800) to upgrade the capabilities of equipment that had been purchased in 1995 and was no longer being serviced by the manufacturer (TA Instruments DSC 2920 and TGA 2950). The purchased equipment is located in the Polymer Laboratory (Gleeson Hall 206) directed by Dr. Skip Rochefort in the School of Chemical, Biological, and Environmental Engineering (CBEE). Over the past 20 years, the Polymer Laboratory has acquired equipment and technological capability for the complete thermal, molecular, rheological, surface characterization of polymers and other materials, as well as polymer processing capability. This equipment has been made available at NO COST to OSU, UO, Oregon BEST and ONAMI (MBI) researchers and many Oregon industries since 1995. It is widely used by many OSU research groups by both graduate and undergraduate students. In addition, the DSC and TGA equipment has been used in the education of undergraduates and graduate students (over 900 in 18 years), as well as high school students in a variety of summer science and engineering recruitment and retention programs (over 500 high school students in 18 years).

A summary list of the primary users of the new thermal characterization equipment is given below.

Polymer Thermal Characterization Facility (TA Instruments DSC and TGA)

A summary list of the primary users in the last 10 years is given below.

OSU RESEARCH User Groups
Wood Science and Engineering: Kaichang Li, John Simonson, Fred Kamke, Lech Muszynski
CBEE: Chih-hung Chang, Greg Herman, Christine Kelly, David Hackleman, Greg Rorrer, Joe McGuire, Goran Jovanovic, Alex Yokochi, Dan Euhus, Adam Higgins
CCE: Jason Ideker
MIME: Sundar Atre, Brian Paul
ONAMI (MBI): Dan Palo, Vince Rencho, Chih-hung Chang, Greg Herman

INDUSTRY User Groups:

Timberline Tool (Ken Green, President)
Entek and Amtek (Dr. Rick Pekala, VP Research, Lebanon, OR)
Jeld-Wen (Cheryl Carbone, Klamath Falls)
Synthetech (Mike Standen, Albany, OR)
Oregon Freeze Dry (Walt Pembley, Albany, OR);
Cohesive Solutions (Nick Wannemacher, Corvallis, OR)
AVI BioPharma (Corvallis, OR)
**UO Materials Science Institute**
The DSC and TGA equipment is used in the delivery of a two-week summer course as part of the University of Oregon Materials Science Institute M.S. degree program in the Polymers (Dave Tyler and Chris Larson, directors). Dr. Rochefort has offered this course since 2003 to approximately 15 graduate students per year.

**OSU TEACHING User Groups**
1) Undergraduates and graduate students taking ChE445/545 Polymer Science and Engineering from: CBEE, Chemistry, WSE, FST, ME &IME (now MIME) and various industries (including HP). The course has been offered 27 times since 1995, with over 900 students served in the laboratory course.

2) University Honors College ChE 405H Plastics for Poets class offered every year since 2002 to approximately 15 UHC students per year.

3) CBEE Senior Lab for last 16 years.

4) UHC, HHMI and URISC students in research experiences for undergraduates (over 100 UG students).

5) *Summer Experience in Science and Engineering for Youth (SESEY)* – High School outreach program for underrepresented groups (has served over 500 students since 1997 with approximately 10 per year use DSC/TGA for research projects)

6) *Saturday Academy Apprenticeships in Science and Engineering (ASE)* – eight week high school research program run out of the Polymer Laboratory (40 high school students since 1995).

**BUDGET Allocation**
- TA Instruments Q2000 Differential Scanning Calorimeter $65,000
- TA Instruments Q500 Thermogravimetric Analyzer $62,700
- Liquid Nitrogen Capability $13,400
- Miscellaneous required accessories $9,245
- **Sub-Total** $150,345
- Academic and Incentive Discount -$63,850
- **Total Equipment Cost** $86,495
- Matching Funds (20%) -$17,300
- **TOTAL RERF Funding** $69,195

**Matching funds supplied by:**
- Skip Rochefort $7300
- COE $5000
- School of CBEE $5000
- Total = $17,300

Funds Delivered to Skip Rochefort (CBEE) in account **ECB251 EWER**.