

Innovation Oregon: Green Building & Renewable Energy Resources

Oregon Economic Development Association

Fall Conference, October 13, 2009

Susan Safford, Oregon BEST

Oregon BEST Overview

- **Charter:** Utilize Oregon's university assets in green building and renewable energy generation to develop new products, companies and jobs.

Organizational Structure

- Independent 501(c)(3) created in 2007 with board of directors representing industry and university partners.
- Partnership with four Oregon universities:



UNIVERSITY OF OREGON

- Collaborative relationships with many large and small companies, government entities and nonprofits.

Industry Sectors & Research

- **Green Building Products and Services:** performance assessment, energy systems and efficiency, green building materials, and building/community design
- **Renewable Energy Generation:** solar, biofuels/biomass, wind, wave and geothermal

Resources

- Oregon BEST Staff:
<http://oregonbest.org/about/leadership>
- Oregon BEST Member Faculty:
<http://oregonbest.org/member-faculty-researchers>
- Oregon BEST Signature Laboratory Facilities

Green Building Research Laboratory

An Oregon BEST Signature Laboratory Facility

Director: David J. Sailor, Ph.D.

sailor@pdx.edu

www.greenbuilding.pdx.edu

Mechanical and Materials Engineering

Portland State University



Green Building Research Laboratory (GBRL)

- Functions:
 - Fundamental research
 - Applied research supporting green building industry/community
 - Industry resource (testing and equipment loan)
 - Education (courses, seminars, intern programs)
- Laboratory capabilities:
 - Building envelopes (materials testing, system evaluation)
 - Whole building energy efficiency (modeling and monitoring)
 - Indoor environmental quality monitoring/testing
 - Building interactions with the outdoor environment
- Industry membership model (planned)
 - Levels of membership
 - Research advisory board

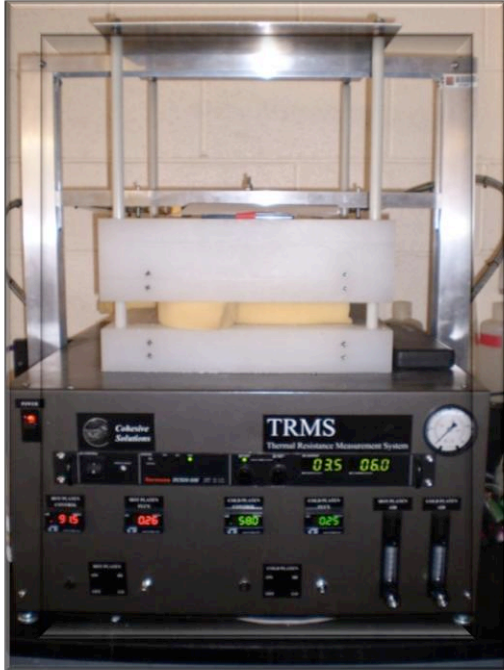
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Fueling Oregon's Green Economy.™



Green Building Materials Laboratory

- Jason Ideker, Ph.D.
(jason.ideker@oregonstate.edu)
- Collaboration between OSU College of Engineering and College of Forestry to develop building materials for a sustainable built environment.

Green Materials Research Laboratory



TA Instruments AR200ex

Rheological
characterization of
materials from
liquids to polymer
melts

Active temperature
control from LN2 to
600C is available



TRMS – Thermal Resistance Measurement System

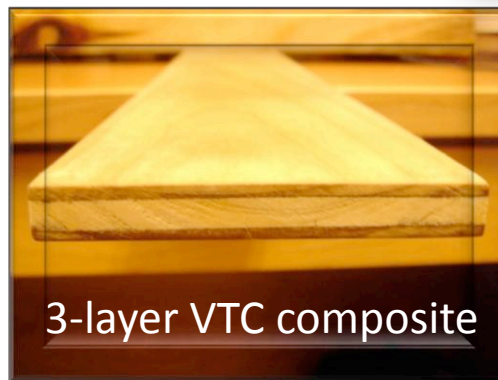
Can determine the thermal resistance
or thermal conductivity of
materials

Green Materials Research Laboratory

Wood Science and Engineering

Viscoelastic thermal compression processing equipment:

- Reaction vessel, 28-inch ID, variable volume, internal platens with independent heating & cooling.
- Hydraulic press, 750 ton capacity.
- Steam generator, 200 psi.
- Veneer slicer, 24-inch by 4-inch.



Support Network for Research and Innovation in Solar Energy (SuNRISE) Photovoltaic Laboratory

- Mark Lonergan, Ph.D.
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SuNRISE Photovoltaic Laboratory

- Goal: Advance the Science and Technology of Photovoltaics
 - PV Characterization
 - New PV concepts and prototype fabrication
 - Solar resource characterization
 - Workforce development and training
 - Outreach

SuNRISE Photovoltaic Laboratory

- Business Model
 - All equipment shared and available to industrial and academic users on a simple fee-for-use basis
 - Charges prevailing rates
 - Supports industry/academic collaborations, but such collaborations need not be the dominant industrial engagement model
 - Variety of mechanisms for intellectual property

Oregon Process Innovation Center (OPIC) for Sustainable Solar Cell Manufacturing

- Chih-hung (Alex) Chang, Ph.D.
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Oregon Process Innovation Center

OPIC's mission is to serve as a:

- A collaborative center for PV industry and academic researchers to develop innovative processes for sustainable manufacturing.
- A resource (facility, person power and expertise) for solving PV industry manufacturing problems.
- A resource for developing next generation solar cell manufacturing processes.
- A training ground for PV industry future workforce.

Oregon Process Innovation Center

OPIC for Sustainable Solar Cell Manufacturing will provide:

- Shared equipment for research, development and problem solving;
- Lab space for performing projects;
- Office space for participating researchers;
- Mechanisms and opportunities to form innovative research teams.

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