

Compilation of Faculty Research
 Related to Green Building and Sustainability in the Built Environment
 at Oregon BEST Partner Universities (OIT, OSU, PSU, UO)

Research Categories:

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 Pages 5 – 7: Building Design and Systems
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MATERIALS

Gupta, Rakesh	O S U	Professor, Dept of Wood Science & Engineering	rakesh.gupta@oregonstate.edu	541-737-4223	<ul style="list-style-type: none"> • Wood structural engineering systems performance and durability.
Ideker, Jason H.	O S U	Assistant Professor, School of Civil & Construction Engineering	Jason.ideker@oregonstate.edu		<ul style="list-style-type: none"> • Development of innovative materials that meet the demands of an aging and deteriorated infrastructure with emphasis on durability and consequently sustainability. • Improving the durability of cement-based systems (against early-age cracking, alkali-aggregate reaction, sulfate attack, etc.), including repair of structures suffering from durability issues.
Kamke, Fred	O S U	Endowed Chair-JELD-WEN, Dept of Wood Science & Engineering	fred.kamke@oregonstate.edu	541-737-8422	<ul style="list-style-type: none"> • Design manufacture and performance of wood-based composite materials. • Wood modification for enhanced material properties (such as viscoelastic thermal compression of wood).

Knowles, Chris	O S U	Assis Professor, Oregon Wood Innovation Center, Wood Science and Engineering	chris.knowles@oregonstate.edu	541-737-1438	<ul style="list-style-type: none"> • Tracking innovation in the forest products industry. • Material selection, purchasing, and specification processes in green building.
Leaven-good, Scott	O S U	Director, Oregon Wood Innovation Center	scott.leavengood@oregonstate.edu	541-737-4212	<ul style="list-style-type: none"> • Working with entrepreneurs to develop new wood products and processes (development, testing, market research), such as efforts to use small diameter timber and/or logging slash (typically unused) to develop new composite wood products. • Library of technical data on wood species such as strength properties, shrink/swell, density, etc.
Li, Kaichang	O S U	Assoc Professor, Dept of Wood Science & Engineering	kaichang.li@oregonstate.edu	541-737-8421	<ul style="list-style-type: none"> • Green adhesives chemistry and bioproducts. • Development of formaldehyde-free wood adhesives from renewable natural resources. • Development and characterization of superior wood-plastic composites.
Morrell, Jeff	O S U	Disting. Professor, Dept of Wood Science & Engineering	jeff.morrell@oregonstate.edu	541-737-4222	<ul style="list-style-type: none"> • Bioproducts protection, biodegradation, and product durability.
Muszynski, Lech	O S U	Assis Professor, Dept of Wood Science & Engineering	lech.muszynski@oregonstate.edu	541-737-9479	<ul style="list-style-type: none"> • Advanced hybrid wood-plastic and bio-based composites: bonding, durability, fracture properties, micro-analysis, mechanics, moisture relations.

Nairn, John	O S U	Endowed Chair-Richardson, Dept of Wood Science & Engineering	john.nairn@oregonstate.edu	541-737-4265	<ul style="list-style-type: none"> • Wood-based composite materials.
Riley, Charles ("C.J.")	O I T	Assis Professor, Civil Engineering	charles.riley@oit.edu	541-885-1922	<ul style="list-style-type: none"> • Renewable construction materials; bulk properties of fibrous materials. • Bridge design, rating, and software development for transportation structures. • Sustainability in Civil Engineering.
Rocheffort, Willie E. (Skip)	O S U	Assoc Professor/ Sch of Chem/Bio/Envr Eng.	Skip.rocheffort@oregonstate.edu	541-737-2408	<ul style="list-style-type: none"> • Use of recycled plastics in insulation, SIPs (structural insulation panels) and building materials for green building applications. • Characterization and processing of wood/plastic composites.
Rosenstiel, Todd	P S U	Assis Professor, Biology	rosensti@pdx.edu	503-725-4238	<ul style="list-style-type: none"> • Green roofs. • Urban fluxes of heat, moisture, and CO2.
Scholz, Todd	O S U	Assis Professor, Civil & Construction Engineering	todd.scholz@oregonstate.edu	541-737-2056	<ul style="list-style-type: none"> • Improving the durability and design life of asphalt pavements. • Civil Engineering Materials, Construction Equipment and Methods, Pavement Design, Mechanistic Analysis of Pavement Structures, Life Cycle Cost Analysis.
Simonsen, John	O S U	Assoc Professor, Dept of Wood Science & Engineering	john.simonsen@oregonstate.edu	541-737-4217	<ul style="list-style-type: none"> • Cellulose nanocrystal manufacture and applications, including wood and polymer products, toward superior building materials.

Tyler, Dave	U O	Professor, Dept of Chemistry; Member, Materials Science Institute	dt Tyler@uoregon.edu	541-346-4649	<p>Bio-based materials and processes, such as:</p> <ul style="list-style-type: none"> • Synthesis to modify organometallic catalysts so they are water-soluble (an environmentally benign solvent). • Scrubbers for removing dinitrogen from natural gas, thus making available a sizable fraction of our country's natural gas reserves for energy use. • Polymers that are photochemically degradable with visible light, especially for use in environmental applications.
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BUILDING-INTEGRATED ENERGY GENERATION TECHNOLOGIES

Gibbons, Brady	O S U	Assis Professor, Sch of Mech/Ind/Mfg Engr.	brady.gibbons@oregonstate.edu	541-737-2427	<ul style="list-style-type: none"> • Microstructure, processing, and property relationships in functional thin film materials. • Novel dielectric, superconducting, semiconducting, and pyroelectric materials for energy conversion and energy storage.
Vignola, Frank	U O	Sr Res Assoc, Physics; Director, Solar Radiation Monitoring Laboratory	fev@uoregon.edu	541-346-4745	<ul style="list-style-type: none"> • Solar resource assessment data base in the Pacific Northwest to facilitate the deployment of solar electric technologies. • Tools to facilitate the use of solar radiation data and for optimally siting photovoltaic systems. • Monitoring and evaluating the performance of photovoltaic modules and systems.
Walker, Stel	O S U	Assoc Head, Department of Mech, Indus, & Mfg Engr; Director, Energy Resources Research Laboratory (ERRL)	Stel.Walker@oregonstate.edu	541-737-2027	<ul style="list-style-type: none"> • "Micro" wind turbine that can be mounted in rows along the edges of building rooftops, enabling power generation from wind in urban and suburban settings. • Wind turbine aerodynamics & siting, transmission line rating, and wind energy forecasting and integration.

Wamser, Carl	P S U	Professor, Chemistry	wamserc @pdx.edu	503- 725- 4261	<ul style="list-style-type: none"> • Novel organic materials for next-generation solar cells -- specifically conductive polymers that could lead to thin-film, inexpensive plastic solar cells. • Test facility analyzing different types of solar arrays, with data sent to the internet for education and industry. • Combinations of green roofs with solar arrays to determine if these technologies can be mutually beneficial.
Zipay, James (Jamie)	O I T	Assoc Prof, Electrical Engineering and Renewable Energy	james.zip ay@oit.ed u	541- 885- 1543	<ul style="list-style-type: none"> • Wireless and data communication. • Collaboration with Oregon Department of Energy on low and zero-net energy homes.

BUILDING DESIGN AND SYSTEMS

Brown, G.Z. (Charlie)	U O	Professor, Architecture; Director of Energy Studies in Buildings Laboratory (ESBL)	gzbrown @uoregon .edu	541- 346- 5647	<ul style="list-style-type: none"> • Developing new materials, components, assemblies, whole buildings and communities with improved performance. • Developing design tools that enable professionals to design more efficient communities and buildings.
Drost, Kevin	O S U	Professor, Mechanical Engineering	kevin.dros t@oregon state.edu	541- 737- 2575	<ul style="list-style-type: none"> • Application of microchannel devices to buildings for sensor data, improved management and increased efficiency.
Griffin, Corey	U O	Assis Professor, Department of Architecture	corey@uo regon.edu	541- 346- 2862	<ul style="list-style-type: none"> • Role of structure in the longevity of buildings, specifically housing, as structure has longest relationship with the surrounding – natural and built – environment. Systematic analysis of how buildings can be transformed after they are built. • Integrated, high-performance structural materials and systems.

Hunter-Zaworski, Katharine	O S U	Director, National Center for Accessible Transportation	hunterz@ enr.orst. edu		<ul style="list-style-type: none"> • Ensuring new buildings are designed for all people, including residential design for full visitability, and community design for full accessibility. • Building standards including visitability, and urban development enabling non-motorized transportation.
Larco, Nico	U O	Assis Professor, Architecture; Assoc Dir, Sustainable Cities Initiative	nlarco@u oregon.ed u	541- 346- 1421	<ul style="list-style-type: none"> • More sustainable models of suburban development, including latent opportunities in the typical single-use development parcel scale. • Suburban multi-family housing typology holds tremendous smart growth and sustainability potential (more walking and biking, less auto use, and more vital communities).
Lutzenhiser, Loren	P S U	Professor of Urban Studies and Planning; Director, CUS	llutz@pdx. edu	503- 725- 8743	<ul style="list-style-type: none"> • Commercial building design processes, energy efficiency choice in firms and in households, interactions of technology and behavior in energy demand and conservation, home retrofit decisions, implicit models of human behavior and choice underlying energy efficiency programs. • "Economic Sociology and the Social Problem of Energy Inefficiency." • "Comfort in a Carbon-Constrained World". • "Behavioral Assumptions Underlying Energy Efficiency Policies and Programs".
Palleroni, Sergio	P S U	Assoc Professor, Architecture	sergiop@ pdx.edu	503- 725- 8403	<ul style="list-style-type: none"> • Service learning and reflective practice, with students helping on more than 50 projects ranging from Southern India, Central Africa, Mexico, and SE Asia, to Native American communities in the US and Latin America.

Sailor, David	P S U	Mechanical and Materials Engineering	sailor@pdx.edu	503-725-4265	<ul style="list-style-type: none"> • Building energy performance, energy efficiency, and performance of building envelope components with a focus on white, green, and PV roofs. • Urban Heat island causes, impacts and mitigation. • Resources for Green Building research, education, and performance assessment (Green Building Research Laboratory). • Evaluation of potentially beneficial interactions between rooftop PV and green roofs.
Spolek, Graig	P S U	Professor, Mechanical and Materials Engineering	grraig@cecs.pdx.edu	503-725-4293	<ul style="list-style-type: none"> • Measurement of greenroof performance (including heat and mass transfer and moisture transport) under a wide range of conditions including wind, temperature, humidity, sunlight and rainfall -- with varying soil media, plants, soil depth, and irrigation. • HVAC system efficiency.
Theodoropoulos, Christine	U O	Assoc Professor, Dept. Head, Architecture	ctheodor@uoregon.edu	541-346-3661	<ul style="list-style-type: none"> • Gaps in information and materials needed to implement the use of greener materials in building structural systems. • Improving the integration of structural and daylighting design strategies, including in multistory buildings. • Improving architects' understanding of building technologies.
Veltri, Anthony	O S U	Assoc Professor, Environmental Health and Safety	Anthony.Veltri@oregonstate.edu	541-737-3831	<ul style="list-style-type: none"> • Strategic management and economic aspects of the Environmental, Safety and Health (EH&S) function in private and public sector firms. • The business case for EH&S / corporate sustainability (CSR), and modeling the cost of green buildings.

ECO-DISTRICTS AND POLICY

Achterman, Gail	O S U	Director, Institute for Natural Resources	gail.achterman@oregonstate.edu	541-740-3190	<ul style="list-style-type: none"> • Policy development for climate change action, sustainable transportation planning and permit streamlining. • Water law and policy, biodiversity conservation, ecosystem service markets. • Chair, Oregon Transportation Commission.
Ashford, Scott	O S U	Professor, Head, School of Civil and Construction Engineering	scott.ashford@oregonstate.edu	541-737-4934	<ul style="list-style-type: none"> • Earthquake and coastal engineering (modeling layers, erosion, and slope stability) to enhance public safety and reduce economic losses.
Bertini, Robert L.	P S U	Assoc Professor, Civil & Environ Engineering - Engin. & Comp Science	bertini@pdx.edu	503-725-4249	<ul style="list-style-type: none"> • Using transportation data to improve the operation of our transportation system, reduce congestion and fuel consumption, and improve quality of life.
Cox, Daniel	O S U	Assoc Professor, School of Civil and Const. Engr.; Director, O.H. Hinsdale Wave Research Laboratory, School of Civil & Const. Engr.	dan.cox@oregonstate.edu	541-737-3631	<ul style="list-style-type: none"> • Sustainability of coastal infrastructure and ecosystems in the face of rising sea levels and increasing storm activity. • Interactions of waves and currents with the built and natural environment through physical and numerical modeling.

Dill, Jennifer	P S U	Assoc Professor, Urban Studies & Planning - Urban & Public Affairs	jdill@pdx.edu	503-725-5173	<ul style="list-style-type: none"> • Transportation and environmental planning, travel behavior, transportation finance, and transportation-land use interactions. • Travel behavior, bicycling, transit-oriented developments, active living policies, and environmental fees for transportation.
Gillem, Mark	U O	Department of Architecture and Landscape Architecture; Affiliated Faculty, PPPM	mark@uor.egon.edu		<ul style="list-style-type: none"> • Processes, players, and politics involved in the making of urban space. • Street-scaled design, multi-way boulevards, and sustainable community design on U.S. military bases.
Hulse, David	U O	Professor, Department of Landscape Architecture	dhulse@u.oregon.edu	541-346-3672	<ul style="list-style-type: none"> • Geographic information systems and the use of computer-based tools for facilitating land use planning and natural resource decision-making. • Spatial decision support systems for land and water use futures in the Willamette River Basin and elsewhere in Oregon.
Lamb-rinos, John	O S U	Assis Professor, Horticulture	lambrinj@hort.oregonstate.edu	541-737-3484	<ul style="list-style-type: none"> • Quantifying Ecosystem Services - developing a practical landowner tool to help Oregon farmers evaluate the potential value of riparian restorations within the framework of an emerging ecosystem marketplace. • Invasive Species - Understanding processes that take place at the intersection of wild, urban, and agricultural landscapes to predict invasive spread and impact.
Mac-Arthur, John	P S U	Manager, Sustainable Transportation Program, OTREC	macarthur@pdx.edu	503-725-2866	<ul style="list-style-type: none"> • Climate and sustainable transportation, including alternative vehicles, the relationship between transportation and public health, performance measurement, material evaluation, and decision making. • Rating systems for infrastructure projects, similar to LEED-ND.

Margerum, Rich	U O	Assoc Professor/Dept Head, P P P M (Planning, Public Policy and Management)	rdm@uoregon.edu	541-346-2526	<ul style="list-style-type: none"> • Collaborative approaches to planning and management, particularly in relation to governance and institutional arrangements (group decision making and consensus-building, implementation and evaluation, regional growth management). • Examples: Local government advisory committee decision making, collaborative approaches to regional growth management, regional transportation and land use planning.
Martin, Sheila	P S U	Director, Instit of Portland Metro Studies	sheilam@pdx.edu	503-725-5170	<ul style="list-style-type: none"> • Economic development strategy, and the potential of sustainable industries to grow jobs while improving sustainability. • Urban planning and land use in relation to economic development and sustainability.
Messer, W. Barry	P S U	Assis Professor, Urban Studies & Planning	messerw@pdx.edu	503-725-5179	<ul style="list-style-type: none"> • Why healthy rivers make healthy communities. • Urban environmental education and community development. • Projects: Community Watershed Stewardship Program and the 'Grey to Green' initiative for green streets and eco-roofs.
Muller, Brook	U O	Assis Professor, Architecture; Director, Certificate Program in Ecological Design, School of Architecture and Allied Arts	bmuller@uoregon.edu	541-346-3647	<ul style="list-style-type: none"> • Helping the design community transition from low impact to regenerative design. • Aligning urban redevelopment and ecology, such that infill projects contribute to regional environmental health. • Aligning development types and signature habitats.
Neupert, Mark	O I T	Professor, Humanities and Social Sciences	mark.neupert@oit.edu	541-885-1394	<ul style="list-style-type: none"> • Applying ethnographic film to the problem of building consensus amongst citizens and policy-makers on the benefit of adopting sustainable land use rules. • How do we change the culture of place-making in America? • Changing cultural norms toward walkability, mixed-use, density, multi-modal transit and so on.

Penhallegon, Ross	O S U	Extension Horticulturist	ross.penhallegon@oregonstate.edu	541-682-7313	<ul style="list-style-type: none"> • Horticulture crop production and protection, integrated pest management, and organic production methods. • Urban horticulture with green or low input controls for insects, weeds and diseases.
Shandas, Vivek	P S U	Assistant Professor, Urban Studies & Planning	vshandas@pdx.edu	503-725-5222	<ul style="list-style-type: none"> • Developing spatially-explicit tools for environmental planners. Integrating human preferences and biophysical conditions into watershed planning policies. • Assessing public outreach strategies by planning agencies.
Thaemert, David	O I T	Civil Engineering Department	david.thaemert@oit.edu	541-885-1518	<ul style="list-style-type: none"> • Design methods and processes for stream restoration or enhancement, particularly at the interfaces between natural stream systems and infrastructure components. • Floodplain utilization or restoration. • Urban stormwater design and management.
Thoren, Roxi	U O	Department of Architecture and Landscape Architecture	rthoren@uoregon.edu		<ul style="list-style-type: none"> • Ecological design and landscape urbanism.
Williamson, Kenneth J.	O S U	Professor and Head, School of Chemical, Biological and Environmental Engineering	kenneth.williamson@oregonstate.edu	541-737-6836	<ul style="list-style-type: none"> • System aspects of sustainability. • Sustainability policy. • Green buildings and infrastructure policy and construction.
Yang, Yizhao	U O	Dept. of Planning, Public Policy, and Management (PPPM)	yizhao@uoregon.edu		<ul style="list-style-type: none"> • Social and behavioral implications of urbanization and land use patterns, particularly the impacts of urban form on people's quality of life. • Examination of urban forms at various spatial scales as affected by land use policies. • Assessment of the social consequences of urban forms via examining both aggregate social indicators and individual-based experiences.

Young, Robert F.	U O	Assis Professor, Planning, Public Policy & Mgmt.; Dir, Sustainable Cities Initiative	ryoung@u oregon.ed u	541- 346- 1950	<ul style="list-style-type: none"> • The role that governance networks can have in advancing the development of more sustainable urban regions. • Innovations in urban environmental theory and implementation from the 19th century to the present.
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PERFORMANCE ASSESSMENT

Allen, Jennifer	P S U	Assoc Director, Center for Sustainable Processes & Practices,	jhallen@p dx.edu	503- 725- 8546	<ul style="list-style-type: none"> • Post occupancy performance assessment of OHSU Center for Health and Healing. • Economic development assessment of green building cluster in Portland.
Caughey, Carol	O S U	Assoc Professor, Design & Human Environment	carol.caug hey@oreg onstate.ed u	541- 737- 0992	<ul style="list-style-type: none"> • Satisfaction of occupants of a LEED certified building. • Lighting and daylighting in non-residential buildings and their relation to productivity.
Dusicka, Peter	P S U	Assis Professor, Dept. of Civil & Env. Engineering - Engineering & Comp Science	dusicka@ pdx.edu	503- 725- 9558	<ul style="list-style-type: none"> • Evaluation of structural and seismic performance of green building systems, such as insulated concrete forms.

Elzeyadi, Ihab	U O	Assoc Professor, Architecture	ihab@uoregon.edu	541-346-3670	<ul style="list-style-type: none"> • Green Buildings Tool Box Project, a consortium of research investigations concerning the cost, financial, and health benefits of green and LEED buildings. • Whole buildings systems design, high performance daylighting/lighting, and the impact of sustainable architecture on human performance and health. • Facade integrated photovoltaics and green wall technologies for active envelopes systems.
Kwok, Alison	U O	Professor, Department of Architecture	akwok@uoregon.edu	541-346-2126	<ul style="list-style-type: none"> • Initial decisions in the beginning of the design process, and how they can create a lifetime of inadequate operational, maintenance, and comfort challenges. • Adaptation strategies, thermal comfort, passive cooling, design for the tropics, carbon neutral design, energy efficient school design, and transitional spaces.
Long, James	O I T	Assoc. Professor, Comp Syst Engin Tech Dept/OREC	james.long@oit.edu	541-885-1580	<ul style="list-style-type: none"> • Information infrastructure as a medium for data acquisition, processing, and dissemination -- to improve future energy generation and consumption. • Potential for buildings (including retrofits) outfitted with thousands of information sensors to closely monitor performance over time.
Schlossberg, Marc	U O	Assoc Prof; Coordinator, Oregon Univ. Transp. Ctr, PPPM; Assoc Dir, Oregon Transp. Research & Educ Consort. (OTREC)	schlossb@uoregon.edu	541-346-2046	<ul style="list-style-type: none"> • Sustainable city design focusing on pedestrian and bicycle transportation networks. • Tools (run on handheld computers and using sophisticated Geographic Information System technology) to assess streetscape-level conditions of the walking, biking, and transit environments.

Zaworski, Joe	O S U	Assis Professor, Nat'l Center for Accessible Transportation	jrz@engr. orst.edu	541- 737- 9695	<ul style="list-style-type: none"> • Accessibility technology development, evaluation, and testing of new product designs. <p>Energy engineering experience in:</p> <ul style="list-style-type: none"> • Design, construction, startup, and operation of commercial power plants. • Energy audits of industrial and commercial properties and design of HVAC systems for buildings.
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