

The Mascaro Center supports an annual seed grant program aimed at engaging a core team of researchers who are passionate about sustainability. Seed grants support graduate student and post-doctoral fellows on one-year research projects.

2017-2018

Protein lithography: a sustainable technology for sub-5-nm nanomanufacturing

[Mostafa Bedewy](#), Industrial Engineering

High efficiency refrigeration and cooling through additive manufactured magnetocaloric devices

[Markus Chmielus](#), Mechanical Engineering and Materials Science

Toward machine learning blueprints for greener chelants

[John Keith](#), Chemical and Petroleum Engineering

H2P: HydroPonics to Pyrolysis: An enclosed system for the phytoremediation and destruction of perfectly persistent emerging contaminants in our water

[David Sanchez](#), Civil and Environmental Engineering

[Carla Ng](#), Civil and Environmental Engineering

2016-2017

Student-based observations of soil moisture to quantify dynamics at the intersection of natural and built environments

[Brian Thomas](#), Geology & Environmental Science

[Daniel Bain](#), Geology & Environmental Science

[Emily Elliott](#), Geology & Environmental Science

[David Sanchez](#), Civil and Environmental Engineering

Learning about sustainability: social learning via solar panel adoption

[Andrea La Nauze](#), Economics

[Graham Beattie](#), Economics

A novel process for efficient, decentralized ammonia synthesis: towards fertilizer production with drastically reduced environmental footprint

[Goetz Vesper](#), Chemical Engineering

β - Ga₂O₃ Nanoelectronics: A Path to a Sustainable Semiconductor Technology for High Efficiency Electricity Conversion from Renewables

[William Stanchina](#), Electrical Engineering

Desalination of sequestration and release of water in poly crystals

[Sachin Velankar](#), Chemical and Petroleum Engineering

Pollination in the city: Designing urban pollinator gardens that are resilient to air pollution

[Tia-Lynn Ashman](#), Biological Sciences

2015-2016

Green Infrastructure Implementation Deepening Interdisciplinary at the University of Pittsburgh

[Michael Blackhurst](#), University Center for Social and Urban Research
[Randy Walsh](#), Economics

Quantifying Reductions in Diesel-Related Air Pollution Exposures across Downtown Pittsburgh

[Jane Clougherty](#), Graduate School of Public health

[Emily Elliott](#), Geology & Environmental Science

Developing CrAssphage as a marker of human fecal pollution in the environment

[Kyle Bibby](#), civil and environmental engineering

Indoor air impacts and Pittsburgh 2030 energy district

[Melissa Bilec](#), civil and environmental engineering

SHIELD: Sustainable, Holistic infrastructure for enabling life-cycle-aware datacenters

[Alex Jones](#), electrical and computer engineering

Managing the Water-Energy Nexus for Shale Gas Production-connecting life cycle assessment with process systems engineering

[Vikas Khanna](#), civil and environmental engineering

Measuring the Effect of Grid Voltage on Building Energy Labs

[Thomas McDermott](#), electrical and computer engineering

2014-2015

Indoor Air Impacts in an Energy Conservation District- Pilot Study

[Melissa Bilec](#), civil and environmental engineering

Optimal Energy Arbitrage in Smart Microgrids with Storage

[Jeff Kharoufeh](#), industrial engineering

Clean Water Through New Bacteria-Killing Structures

[Paul Leu](#), industrial engineering

Co-simulation platform for electric power systems (GridLAB-D) and commercial buildings (EnergyPlus)

[Thomas McDermott](#), electrical engineering

Sustaining the Efficacy of Antibacterial Nanoparticles for Point-of-Use Water Treatment

[Ian Nettleship](#), mechanical engineering and materials science

Towards 'Safe-By-Design' Nanomaterials

[Goetz Vesper](#), chemical engineering

Co-conversion of mixed sugar toxic components from lignocellulosic biomass to renewable biofuels by a synthetic microbial consortium

[Na Wei](#), civil and environmental engineering

2013-2014

Development of a human-relevant platform for evaluation of nanomaterials toxicity

[Ipsita Banerjee](#), chemical engineering

[Goetz Vesper](#), chemical engineering

Optimal microgrid energy procurement and storage strategies in the presence of renewables

[Jeff Kharoufeh](#), industrial engineering

Scalable manufacturing of metal nanomeshes for clean water

[Paul Leu](#), industrial engineering

Fabrication of nanostructured Cu₂ZnSnS₄ solar cells by solution processes

[Guangyong Li](#), electrical engineering

[Di Gao](#), chemical and petroleum engineering

Sustainable systems modeling course

[Thomas McDermott](#), electrical engineering

Synthesis of engineering concepts via the development of an energy curriculum and innovative energy labs

[David Sanchez](#), civil and environmental engineering

[Radisav Vidic](#), civil and environmental engineering

A robust mechanical design tool for sustainable 3D printed product development

[Albert To](#), mechanical engineering

2012-2013

Building Energy Models at the University of Pittsburgh

[Melissa Bilec](#), civil and environmental engineering

Cogeneration for Steam Network Facilities

[Laura Schaefer](#), mechanical engineering

Development of Energy Prediction Tools for Data Center Thermal Management

[Mark Kimber](#), mechanical engineering

2011-2012

Extremely Affordable Solar Cells to Address Energy Poverty

[Paul Leu](#), industrial engineering

Graphene Based Reverse Osmosis Filter for High Efficiency Desalination

[Haitao Liu](#), chemistry

Can a Sound Bullet Be a Formidable Energy Harvester

[Piero Rizzo](#), civil and environmental engineering

Anti-Icing Nanoparticle-Based Superhydrophobic Concrete (nHC) (renewal)

[Kent Harries](#), civil and environmental engineering

[Di Gao](#), chemical and petroleum engineering

Dynamic Life Cycle Assessment and Building Automation (renewal)

[Melissa Bilec](#), civil and environmental engineering

[Alex Jones](#), electrical and computer engineering

[Amy Landis](#), civil and environmental engineering

Energy, Clean Water, and Useful Products from Secondary Wastewater (renewal)

[Willie Harper](#), civil and environmental engineering

[Amy E. Landis](#), civil and environmental engineering

Nanostructured Surfaces for Boiling Enhancement (renewal)

[Mark Kimber](#), mechanical engineering & materials science

[Bong Jae Lee](#), mechanical engineering & materials science

2010-2011

Anti-Icing Nanoparticle-Based Superhydrophobic Concrete (nHC)

[Kent Harries](#), civil and environmental engineering, Pitt

[Di Gao](#), chemical and petroleum engineering, Pitt

Dynamic Life Cycle Assessment and Building Automation

[Melissa Bilec](#), civil and environmental engineering, Pitt

[Alex Jones](#), electrical and computer engineering, Pitt

[Amy Landis](#), civil and environmental engineering, Pitt

Energy, Clean Water, and Useful Products from Secondary Wastewater

[Willie Harper](#), civil and environmental engineering, Pitt

[Amy E. Landis](#), civil and environmental engineering, Pitt

Nanostructured Surfaces for Boiling Enhancement

[Mark Kimber](#), mechanical engineering & materials science, Pitt

[Bong Jae Lee](#), mechanical engineering & materials science, Pitt

2009-2010

Environmental impact and energy efficiency of liquid cooled data centers

[Mark Kimber](#), mechanical engineering & materials science, Pitt

Multiscale multifunctional bandgap structured materials for sustainable buildings

[Bong Jae Lee](#), mechanical engineering & materials science, Pitt

[Albert C. To](#), civil & environmental engineering, Pitt

Building Information Modeling for Sustainability

[Steven P. Levitan](#), electrical & computer engineering, Pitt

[Donald M. Chiarulli](#), computer science, Pitt

Greenhouse Gas Inventory for the University of Pittsburgh

[Melissa Bilec](#), civil and environmental engineering, Pitt

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Development of Smart Insulation for Building Retrofits

[William Clark](#), mechanical engineering and materials science, Pitt

[Laura Schaefer](#), mechanical engineering and materials science, Pitt

2008-2009

Minimizing Metal Working Fluid Usage in Industrial Metal Cutting Processes by Modulated Machining Technology

[Ravi Shankar](#), industrial engineering, Pitt

A Research Project to Develop Health Care Greening Educational Materials for UPMC

[Amy Landis](#), civil & environmental engineering, Pitt

[Chris Schunn](#), Learning Research & Development Center, Pitt

Vandergrift Hydrokinetic Project

[Lisa Weiland](#), mechanical engineering & materials science, Pitt

Economic Feasibility of a Residential Energy Services Company

[Joe Marriott](#), civil & environmental engineering, Pitt

Investigation of Thermal Semiconductors for Adaptive Heat Management in Buildings

[Laura Schaefer](#), mechanical engineering & materials science, Pitt

[Buddy Clark](#), mechanical engineering & materials science, Pitt

Aeroelastic Wind Harvest from Bluff Interfaces

[Lisa Weiland](#), mechanical engineering & materials science, Pitt

[Kent Harries](#), civil & environmental engineering, Pitt

2007-2008

Micro-Fabricated PMN-PT Energy Harvesters for Self-Powered Sensors in Sustainable Buildings

[William Clark](#), mechanical engineering & materials science, Pitt

3-D Porous Micrometer-Sized Structures Synthesized by Hierarchical Self-Assembly of Nanoparticles for Water Treatment Applications

[Di Gao](#), chemical & petroleum engineering, Pitt

Advanced Fiber Optical Sensors for Structural Health Monitoring of Civil and Energy Transportation Facilities

[Steven Levitan](#), electrical & computer engineering, Pitt

[Kevin P. Chen](#), electrical & computer engineering, Pitt

Developing a Portable Model for Hands-On Learning in Sustainability

[Melissa Bilec](#), civil & environmental engineering, Pitt

[David Riley](#), architectural engineering, Penn State

Sustainable Hazard-resistant Construction Using Indigenous Materials & Practices

[Kent Harries](#), civil & environmental engineering, Pitt

[Bhavna Sharma](#), IGERT Fellow, Pitt

Vandergrift Hydrokinetic Project

[Lisa Weiland](#), mechanical engineering & materials science, Pitt

Environmental Performance of Soybean Lubricants Affected by Demand

[Amy Landis](#), civil & environmental engineering, Pitt

[Scott Shrake](#), IGERT Fellow, & [Xiaobo Xue](#), post-doc, Pitt

2006-2007

Design and Development of Super Water- and Oil-Repellent Surfaces through Nanoscale Topographic Manipulation

[Di Gao](#), chemical and petroleum engineering, Pitt

Development of a Green Lubrication Mechanism for Sheet Metal Forming

[Michael Lovell](#), mechanical engineering, Pitt

[C. Fred Higgs](#), mechanical engineering, Carnegie Mellon University

High Performance Health Care Facility Lessons for Designing Green Children's Hospitals

[Kim Needy](#), industrial engineering, Pitt

[Michael Horman](#), architectural engineering, Penn State

[David Riley](#), architectural engineering, Penn State

High Power Density Biofuel Cells Based on Nano-Engineered Structures for Green Building

[Minhee Yun](#), electrical & computer engineering, Pitt

[Alex Star](#), chemistry, Pitt

2005-2006

Water Treatment System Design for Arsenic-Contaminated Water Supplies Using Hyperaccumulating Plants

[Radisav Vidic](#), civil and environmental engineering, Pitt

[Stephen Tonsor](#), biological sciences, Pitt

[Joseph MacNeil](#), chemistry, Chatham College

Development of Nano-bimetallic Catalysts for the Removal of Nitrates from Drinking Water by Coordinated Synthesis, Structure, and Selectivity/Activity Measurements

[Judith Yang](#), materials science and engineering, Pitt

[John Shapley](#), chemistry, University of Illinois at Urbana-Champaign

[Charlie Werth](#), civil engineering, University of Illinois at Urbana-Champaign

High Performance Health Care Facility Design and Construction

[Kim Needy](#), industrial engineering, Pitt

[Michael Horman](#), architectural engineering, Penn State

[David Riley](#), architectural engineering, Penn State

Next Generation Solid-State Illumination Systems for Green Construction

[Laura Schaefer](#), mechanical engineering, Pitt

[Martin Moeck](#), Arizona State University

Generation of Surfaces that Display Inhibition of Fungal Growth

[Alan J Russell](#), McGowan Institute for Regenerative Medicine, Pitt

[Richard Koepsel](#), chemical engineering, Pitt

Service Learning, Education and Research in Green Construction and Sustainable Development

[Robert Ries](#), civil & environmental engineering, Pitt

Theresa Gay Rohal, coordinator of education, Powdermill Nature Reserve

2004-2005

Replacing Energy Intensive Cements with Blast Furnace Waste That Has Been Enhanced Through the Addition of a Recycled Concrete Mineral Admixture.

[Julie M. Vandenbossche](#), civil & environmental engineering, Pitt

GreenStructural Neurology - A Nervous System for Green Buildings

[Marlin H. Mickle](#), electrical & computer engineering, Pitt

[Laura Schaefer](#), mechanical engineering & materials science, Pitt

Development of Nano-bimetallic Catalysts for the Removal of Nitrates from Drinking Water by Coordinated Synthesis, Structure, and Selectivity/Activity Measurements

[Judith Yang](#), mechanical engineering & materials science, Pitt

Environmental Life Cycle Assessment Under Uncertainty for Green Building Engineering

[Robert Ries](#), civil & environmental engineering, Pitt

Modeling the Failure and Self-Healing of Surface Coatings for Green Construction

[Anna Balazs](#), chemical engineering, Pitt

[Steven Levitan](#), electrical & computer engineering, Pitt

Standard vs. Green Building Construction – Improvements in Worker Productivity, Health and Safety, Maintenance Costs, and Energy Savings

[Kim L. Needy](#), industrial engineering, Pitt

Generation of Surfaces that Display Inhibition of Fungal Growth

[Richard Koepsel](#), McGowan Institute for Regenerative Medicine and
Department of Chemical Engineering, Pitt

[Alan Russell](#), McGowan Institute for Regenerative Medicine and
Department of Chemical Engineering, Pitt