



EREF Awards Record 12 Master's and Doctoral Scholarships, Including 3 New Named Scholarships

Raleigh, NC (October 19, 2016) – The Board of Directors of the Environmental Research & Education Foundation (EREF) has awarded a record of 12 scholarships to Master's and Doctoral students across the United States and Canada.

Included in those 12 scholarships are recipients of 3 new named EREF scholarships: the Evergreen Surety Bond Scholarship, funded by Evergreen National Indemnity Company (Evergreen), the Garbageman's Invitational Master's Scholarship, funded by Garbageman's Invitational participants and the Ice River Springs Master's Scholarship, funded by the Ontario-based Ice River Springs.

Congratulations to the 2016 EREF Scholars:



Amirhossein Rezaei Adaryani

University of North Carolina at Charlotte, Ph.D.

EREF Scholar 2016

[Project: Biodegradation of Contaminants of Emerging Concern by White-rot Fungi in Municipal Leachate](#)

Municipal landfill leachate is a significant source of a wide variety of contaminants of emerging concern (CECs) such as pharmaceutical compounds and plasticizers. Amirhossein's research focuses on the utilization of white-rot fungi and lignin modifying enzymes of WRF (e.g. laccase enzymes) in removal of CECs from leachate.



Vinny Anderson

The Ohio State University, MS

Carl J. Apicella Scholar 2016

[Project: An Integrated Forward Osmosis-Membrane Distillation Membrane Process for Flue Gas Desulfurization Wastewater Treatment](#)

The objective of this research is to evaluate the feasibility, and effectiveness of an integrated Forward osmosis – membrane distillation process to reclaim wastewater produced through the flue gas desulfurization (FGD) process of coal combustion power generation facilities. FGD wastewater contains both high suspended and dissolved solids, including mercury, arsenic, selenium, chloride and boron; requiring onsite treatment to reach acceptable regulatory levels before discharge to local waterways. Results of this research will include ideal operating

conditions and design parameters for a large scale system along with evaluation of heat and energy requirements and a techno-economic analysis of a full scale treatment system.



Riley Coulthard

Yale University, Ph.D.

Fiessinger Doctoral Scholar 2016

[Project: Carbon Nanotube Enabled Technology for Reclamation of Rare Earth Elements from Coal Combustion Residues](#)

Coal combustion residuals are one of the largest industrial solid waste streams in the country, with approximately 100 million metric tons generated annually. The goal of Riley's project is to develop a nanomaterial-enabled technology to extract rare earth elements from large volume solid wastes, specifically targeting coal combustion residuals. By creating an economic incentive to improve recycling, Riley hopes to redefine the notion of "waste" and generate resources from some of the country's largest solid waste streams.



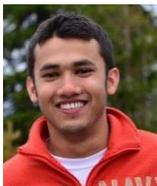
Shakira Hobbs

Clemson University, Ph.D.

EREF Scholar 2016

[Project: Strategic Sustainability Assessment of Enhanced Aerobic and Anaerobic Digestion of Food and Bioplastic Waste for Municipalities](#)

This project assesses the sustainability of multiple waste management options for biopolymers and food waste through computational modeling, experiments and case studies. Outcomes from this research assist cities and facility managers in evaluating a wider range of organic waste options and provide concise guidance highlighting sustainable waste handling techniques.



Syeed Md Iskander

Virginia Tech, Ph.D.

EREF Scholar 2016

[Project: An Integrated Leachate Treatment System for Removing Contaminants and Recovering Resources](#)

This project focuses on the development of an integrated leachate treatment system for removing contaminants and recovering resources. It also investigates nitrogen removal and recovery using a microbial electrolysis cell, water production in a forward osmosis unit and study of the fouling of ion exchange membranes and forward osmosis membranes used in the system.



Gomathy Radhakrishna Iyer

University of Texas at Arlington, Ph.D.

Evergreen Surety Bond Scholarship Scholar 2016

[Project: Development of Landfill Biocovers from Yardwaste to Oxidize Methane Escaping Landfill](#)

Gomathy's research primarily focuses on developing landfill biocovers to oxidize surface methane emissions and developing a model based on California Landfill Methane Inventory Model (CALMIM) for methane oxidation potential. Based on material studies (yard waste+biosolids and flyash), biocovers will be designed for methane oxidation for batch tests. Optimization for permeability and moisture content of biocovers will be conducted using column studies, followed by development of a model for methane oxidation potential employing CALMIM, and further field analyses on actual landfill.



Hongyue Jin

Purdue University, Ph.D.

EREF Scholar 2016

[Project: Value Recovery of Rare Earth Permanent Magnets: Economic and Environmental Impacts and Associated Pricing Strategy](#)

Hongyue's research focuses on modeling, analysis, and control of closed-loop supply chains. Her recent research has been about assessing the economic and environmental impacts of rare earth metal recovery from end-of-life products, as well as developing optimization strategies to increase the supply of critical materials.



Marija Krstic

The City College of New York, Ph.D.

EREF Scholar 2016

[Project: Recycled Glass as a Supplementary Cementitious Material in High Performance Concrete](#)

The production of cement is energy intensive and has raised environmental concerns since one ton of cement produces an equal ton of CO₂. The added benefit of supplementary cementitious materials (SCMs) is the production of "Green Concrete" by reducing CO₂. The two most used SCMs are Fly-Ash and Slag. However, recently there were shortages in availability of both. Thus, in response to the urgent need for an effective and economical SCM to support concrete construction, this research is focused on a new glass pozzolan SCM from recycled post-consumer glass. This research offers a tremendous opportunity to benefit both the glass recycling industry and the concrete production industry in the USA and the world.



Caroline Larose

University of Michigan, MS

Robert P. Stearns/SCS Engineers Master's Scholar 2016

[Project: Material Flows: Strategies to reduce Ann Arbor's municipal solid waste and improve diversion](#)

Caroline's research will consist of a comprehensive benchmarking analysis of urban waste programs and a review of city stakeholders to distill a set of MSW management, education, and awareness best practices. Following this research, Caroline will draft recommendations for the city, which will include updated MSW goals and an action plan to improve diversion and reduce waste creation.



Danni McPherron

Indiana University Bloomington, MS

EREF Scholar 2016

[Project: A Growing Food Waste Problem: Bridging the gap between wasted resources and wasted food. An in-depth exploration into the challenges, opportunities, infrastructure and policies needed to improve food waste recovery activities in the U.S.](#)

The goal of this research is to quantify food waste sources, identify best management practices and model projects, map existing infrastructure and identify gaps, identify model regulatory policies, and make recommendations for addressing infrastructure gaps and identify economic development opportunities. Danni will expand on the work started by the Indiana Food Scrap Initiative and the Illinois Food Scrap Coalition to close the gap between those with excess organic materials and those with a use for them. Through literature and data review, she intends to create a report that others can use to get everyone on the supply chain to think about what can be done with their waste besides throwing it in the landfill.



Serena Pozza

Yale University, MS

Garbageman's Invitational Master's Scholar 2016

[Project: How Closed-loop Production Systems Can Reduce Waste](#)

Serena's research aims to best understand what business and regulatory incentives may drive companies to change, by design, their products, processes, and business models to bring about closed-loop systems. In her research, she strives to scout, analyze and promote ways for green chemistry and material science to enhance the feasibility of such systems. Science can achieve milestones previously thought impossible and create advanced materials that can be reused, recycled (not down-cycled) or that can safely biodegrade without releasing greenhouse gases into the atmosphere.



Jillian Treadwell

McGill University, MS

Ice River Springs Master's Scholarship for Sustainability Scholar 2016

[Project: Driving Factors for Organic Waste and Phosphorus Recycling: A quantitative analysis and scenario based model](#)

The primary goal of this research is to investigate the role of organic waste management in phosphorus (P) cycling and explore the capacity to increase recycling within this system. The research is broken down into three main components; the first examines socio-economic and management factors that drive organic waste diversion, subsequently the research reviews the potential and realized recycling of P associated with diverted organic waste, and finally a dynamic, scenario-based model is developed to project and explore P flows in urban systems under various management and social practices. As such, the research aims to provide valuable information and tools to facilitate more informed decision-making surrounding organic waste and nutrient management.

EREF scholarships recognize graduate students pursuing excellence in solid waste management research and education. Recipients are chosen based on credentials and potential contributions to the solid waste industry and its scientific community.

Students must meet the following criteria to receive an EREF scholarship:

- Will be this year or are now a full-time master's or doctoral student, and
- Have a clearly demonstrated interest in solid waste management research. EREF defines solid waste management to pertain to municipal solid waste, construction & demolition waste, industrial waste (e.g. coal ash), WTE ash, etc. Note: this definition does not include agricultural wastes or wastewater treatment plant sludge.

Applications for EREF scholarships for the 2017-18 school year are due May 3.

For more information on the EREF Scholarship Program, please visit www.erefdn.org.

EREF is a 501(c)3 class charity that funds and directs scientific research and educational initiatives for waste management practices to benefit industry participants and the communities they serve. For more complete information on EREF funded research, its scholarship program and how to donate to this great cause, visit www.erefdn.org.

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