



Steinbrenner Institute Announces the 2014-2015 Graduate Environmental Research Fellows

The Steinbrenner Institute is pleased to announce our new class of Graduate Research Fellows for 2014-2015. There are three new Steinbrenner Institute Graduate Fellows and one new Steinbrenner Institute Robert W. Dunlap Graduate Research Fellow. The fellows will be exploring research topics that are in alignment with the strategic interests of the Steinbrenner Institute and our affiliated faculty and centers, including energy transition strategies and sustainable urban infrastructure.



Sara Abdollahi was born in Tehran, Iran, and grew up in Montreal, Canada where she moved with her family as a child. She is fluent in Farsi, English, and French. Sara received her bachelor's in Chemical Engineering from McGill University. During her undergraduate years, Sara's experiences as an intern at the National Energy Board of Canada and as an exchange student at Aalto University in Helsinki, Finland motivated her to return to McGill University and complete a master's degree in materials engineering.

Interested in addressing challenges in freshwater management, Sara joined the department of Engineering and Public Policy at Carnegie Mellon as a Ph.D. student. With the guidance of Professors W. Michael Griffin and Paulina Jaramillo, Sara seeks to quantify the water footprint of a U.S. household. The "footprint" measures not just the direct water usage (e.g. from the faucet) of the household, but also water consumed in making the products and services consumed by the household, the "embedded water." The U.S. household water footprint will then be applied as a measure of the impact of migration on freshwater resources. From these results, we can therefore determine the necessary infrastructural changes to maintain access to water sustainable in a near future that faces population shifts and climate strains. Sara believes that the SEER fellowship will empower her vision of an effective model for water resource management and provide the platform for her to exchange ideas with colleagues in environmental research.



Daniel Gingerich is a Ph.D. Student in Engineering and Public Policy at Carnegie Mellon. He graduated in 2011 from Mississippi State University with a B.S. in Civil Engineering, a B.A. in Political Science, and a minor in Mathematics. He earned his M.S. in Civil Engineering (with an Environmental Engineering focus) from Auburn University in 2013, where he investigated affordability of drinking water in the context of the U.S. Environmental Protection Agency arsenic rule. His research interests lie in technology for water reuse and recycling and the socio-political barriers to its implementation.

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Daniel is currently working on an alternative to the “hungry city” model of resource use which is based on the inefficient and unsustainable concept of resource into the city, used once, and rejected. Developing more sustainable urban infrastructure systems will require changing this model to one of resources into the city, used repeatedly, and rejected only when there are no more feasible uses for the resource. One such change can occur in the area of public water supply and wastewater treatment, using a technology called forward osmosis. Daniel’s project entails evaluating the feasibility of forward osmosis; clarifying economic and environmental savings from using forward osmosis; and characterization of technical, economic, and social barriers to implementing forward osmosis.



Michael Polen is originally from Pottstown, Pennsylvania. He graduated with a Bachelor’s of Science in Chemistry at Widener University in Chester, Pennsylvania and is currently a Ph.D. student in Chemistry at Carnegie Mellon University. He previously worked as a tutor at Widener University in physics, chemistry, and mathematics. The SEER fellowship will fund his research into the effects of aqueous chemistry in cloud droplets. This project will provide insights into the aging of individual cloud droplets through the use of trapping forces from an aerosol optical tweezers system.

The results obtained can then be used to inform global climate models of highly uncertain aerosol effects. Michael is working on a second project on the use of a cold plate system to observe ice nucleation abilities of biomass burning aerosols. Development of the system and use of the CMU smog chamber provide further evidence of aerosol effects on cloud development, which can additionally be used to enlighten global climate models to these effects.



Georges Saliba grew up between, the scarred buildings of a long civil war and the impressive scenery of Lebanon, and the magical and historic streets of Paris in France. After finishing his high school education in Lebanon, he moved back to France and spent two years in the military. In the spring of 2008, he enrolled as an undergraduate in Mechanical Engineering at the American University of Beirut. After graduation, he worked in the HVAC industry for two years.

Georges’s research as a Ph.D. student in the Department of Mechanical Engineering at Carnegie Mellon University focuses on studying the light absorption enhancement of anthropogenic emitted Black Carbon due to the condensation of different species in the atmosphere towards an effort to better understand and characterize the overall radiative balance of the Earth.

Congratulations to all of the Steinbrenner Fellowship recipients and best wishes for a productive year of research!