

## 2024 Undergraduate Summer Research Program

---

### ***Phytoremediation of environmental pollutants***

**Advisor:** Tia-Lynn Ashman, biological sciences

**Student:** Madison Conn, environmental science & geology (*Charles and Linda Sorber Scholar*)

### ***Solar-Powered Nanotechnology and Origami Engineering***

**Advisor:** Mostafa Bedewy, mechanical engineering & materials science

**Student:** Thomas Kisiel, mechanical engineering & materials science (*John C. Mascaro Scholar*)

### ***Urban Permaculture***

**Advisors:** Kevin Bell, bioengineering

Corey Flynn, office of sustainability in the health sciences

**Student:** Pip Mostern, geology & anthropology (*John C. Mascaro Scholar*)

### ***The Effect of In-Solution Particles on Reusable, Additive Manufactured Metal Filters***

**Advisor:** Markus Chmielus, mechanical engineering & materials science

**Student:** Steven Panico, mechanical engineering & materials science (*John C. Mascaro Scholar*)

### ***Life cycle analysis of metered dose inhalers in the UPMC system***

**Advisor:** Noe Copley-Woods, school of medicine

Stephanie Maximous, school of medicine

**Student:** Priya Vishnoi, biology & chemistry (*John C. Mascaro Scholar*)

### ***Storm chasing to understand nutrient cycling in the urban tree canopy***

**Advisor:** Emily Elliott, geology & environmental science

**Student:** Olivia Rossi, geology & environmental science (*John C. Mascaro Scholar*)

### ***Environmental Sustainability and Market Competition***

**Advisor:** Michael Hamilton, business

**Student:** Xindi Shao, industrial engineering (*John C. Mascaro Scholar*)

### ***Avoiding numerical issues in optimal power flow problems***

**Advisor:** Oliver Hinder, industrial engineering

**Student:** Haoyu Ding, industrial engineering (*John C. Mascaro Scholar*)

### ***Energy Harvesting Powered Sensors and Machine Learning***

**Advisor:** Jingtong Hu, electrical & computer engineering

**Student:** Harry Tye, electrical & computer engineering (*John C. Mascaro Scholar*)

### ***Tracking migration of monarch butterflies with the world's smallest computer***

**Advisor:** Inhee Lee, electrical and computer engineering

**Student:** Vishnu Prabakaran, bioengineering (*John C. Mascaro Scholar*)

**Solar Recycling**

**Advisor:** Paul Leu, industrial engineering  
**Student:** Aliya Abildayeva, industrial engineering (*Doug Condon Scholar*)

**Antireflection Glass for Solar**

**Advisor:** Paul Leu, industrial engineering  
**Student:** Dana Briggs, chemical engineering (*John C. Mascaro Scholar*)

**CyberWater2 -- A sustainable data/model integration framework**

**Advisor:** Xu Liang, civil and environmental engineering  
**Student:** Haoji Wang, industrial engineering (*John C. Mascaro Scholar*)

**Manufacturing 3D biomimetic fibrous scaffold**

**Advisor:** Qihan Liu, mechanical engineering and materials science  
**Student:** Yuanxiang Gong, mechanical engineering (*John C. Mascaro Scholar*)

**Experimental and Theoretical Grain Growth Studies of Nanocrystalline Soft Magnetic Alloys for Sustainable Aviation and Space**

**Advisor:** Paul Ohodnicki, mechanical engineering & materials science  
**Student:** Evan Chao, mechanical engineering (*John C. Mascaro Scholar*)

**Exploring Sustainable Design**

**Advisor:** Stephen Quigley, english  
**Student:** Leanni Barreiros, geology & environmental science (*John C. Mascaro Scholar*)

**Mapping sustainable consumption behavior across PA**

**Advisor:** Amin Rahimian, industrial engineering  
**Student:** Yuru Zhang, industrial engineering (*John C. Mascaro Scholar*)

**Single-use plastics in healthcare**

**Advisor:** Joaquin Rodriguez, chemical & petroleum engineering  
**Student:** Nnenna Ekoh, chemical & petroleum engineering (*John C. Mascaro Scholar*)

**Using diatoms to reconstruct environmental change in central Chile during the Common Era**

**Advisor:** Patrick Shirey, geology & environmental science  
**Student:** Rachael Betz, geology & environmental science (*Charles and Linda Sorber Scholar*)

**Practical optimization of traffic signals to reduce fuel consumption and vehicular emissions**

**Advisor:** Alek Stevanovic, civil & environmental engineering  
**Student:** Jake Winter, urban studies (*Frank and Daphna Lederman Scholar*)

**Environmental Inequality and Disasters Research**

**Advisor:** Fernando Tormos-Aponte, sociology  
**Student:** Christopher Norris Silva, political science (*John C. Mascaro Scholar*)

**Depolymerizing Plastics Waste with Liquid Metals Catalysis**

**Advisor:** Götz Vesper, chemical & petroleum engineering  
**Student:** Aaron Winchell, chemistry (*John C. Mascaro Scholar*)

**Laccase-Mimicking Bionanozyme for Sustainable Removal of Water Contaminants**

**Advisor:** Meng Wang, mechanical engineering & materials science  
**Students:** Tyler Henry, geology & environmental science (*John C. Mascaro Scholar*)

***Materials Design for Advanced Manufacturing of Co-free Cemented Carbides***

**Advisor:** Wei Xiong, mechanical engineering & materials science

**Student:** Pocket Pizzutillo, mechanical engineering & materials science (*John C. Mascaro Scholar*)

***Integrated photonic accelerator for efficient machine learning***

**Advisor:** Nathan Youngblood, electrical & computer engineering

**Student:** Christopher Kefalos, electrical & computer engineering (*John C. Mascaro Scholar*)

***Alternative Energy Opportunities***

**Advisor:** Kate Zettl, UPMC center for sustainability

**Student:** Neeharika Kolli, environmental science & geology (*John C. Mascaro Scholar*)

***Climate inventory and targets***

**Advisor:** Kate Zettl, UPMC center for sustainability

**Student:** Dechen Xie, industrial engineering (*John C. Scholar*)