

***Silk-based lithography: a sustainable alternative towards green micro-/nano-manufacturing?***

**Advisors:** Mostafa Bedewy, industrial engineering  
Leanne Gilbertson, civil & environmental engineering  
**Student:** Todd Ackerman, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***Biodiversity collapse at the urban-rural interface: Consequences for the sustainability and economic viability of small, privately owned forests in Pennsylvania***

**Advisor:** Walter Carson, biological sciences  
**Student:** Ali Carroll, ecology & evolution (*John C. Mascaro Scholar*)

***Energy-efficient processors, sensors, and systems for space-based sensing and computing***

**Advisor:** Alan George, electrical & computer engineering  
**Student:** Francis Fattori, computer engineering (*John C. Mascaro Scholar*)

***Using machine learning models to identify wildlife species in field recordings***

**Advisor:** Justin Kitzes, Biological Sciences  
**Student:** Tiger Wu, industrial engineering (*John C. Mascaro Scholar*)

***Electromagnetic Modeling of Power Systems Elements using COMSOL Multiphysics***

**Advisor:** Bob Kerestes, electrical & computer engineering  
**Student:** Evan Gzesh, electrical & computer engineering (*Frank and Daphna Lederman Scholar*)

***Plastic Trade and Implications for Sustainability***

**Advisor:** Vikas Khanna, civil & environmental engineering  
**Students:** Elijah Smith, industrial engineering (*John C. Mascaro Scholar*)  
Kevin Padgett, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***Simulations of First Solar Cells***

**Advisor:** Paul Leu, industrial engineering  
**Student:** Maxwell Smith, chemical & petroleum engineering (*Douglas Condon Scholar*)

***Durable, anti-soiling, self-cleaning, antireflective solar glass***

**Advisor:** Paul Leu, industrial engineering  
**Student:** Sooraj Sharma, mechanical engineering & materials science (*NSF funded*)

***Electrochemistry for Sustainable Chemical Production***

**Advisor:** James McKone, chemical & petroleum engineering  
**Student:** Jeff Hoffmann, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***Intelligent Management for Energy Efficiency in Computer Systems***

**Advisors:** Daniel Mosse, computer science  
Vinicius Petrucci, computer science  
**Student:** Caleb Tucker-Loewe, computer science (*John C. Mascaro Scholar*)

***CHEMICAL CATCH: Detecting emerging contaminants of concern in complex environments***

**Advisor:** David Sanchez, civil & environmental engineering  
**Student:** Claire Chouinard, chemical & petroleum engineering (*Charles and Linda Sorber Scholar*)

***SUSTAINABLE OXIDATION- generating chemical-free ways to remove emerging contaminants of concern***

**Advisor:** David Sanchez, civil & environmental engineering  
**Student:** Ethan Arnold-Paine, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***Harnessing ambient energy for manipulation using additively manufactured structures***

**Advisor:** Ravi Shankar, industrial engineering

**Student:** Julia Kocherzat, chemistry (*John C. Mascaro Scholar*)

***A novel process for purely thermal desalination***

**Advisor:** Sachin Velankar, chemical and petroleum engineering

**Student:** Brett Mallon, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***Going with a Bang: Cavitation reactors for chemicals production***

**Advisor:** Götz Vesper, chemical & petroleum engineering

**Student:** Tyler Weinstein, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***(Re-)Engineering during covid19: On-site, on-demand production of hand sanitizer***

**Advisor:** Götz Vesper, chemical & petroleum engineering

**Student:** Pablo Salazar, chemical & petroleum engineering (*John C. Mascaro Scholar*)

***Hardware acceleration of artificial neural network for neuromorphic computing***

**Advisor:** Feng Xiong, electrical & computer engineering

**Student:** Sridhar Reddy Velagala, electrical & computer engineering (*John C. Mascaro Scholar*)

***Design of high strength alloys for energy efficiency***

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

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