

Education

National University of Ireland, Galway

Master of Science, Biomedical Engineering

Graduation Date: November 2019

First Class Honors (1:1), First in Class

University of Maryland, Baltimore County

Bachelor of Science, Biochemical Engineering

Spanish Minor

Graduation Date: May 2018

G.P.A.: 3.536 (Cum Laude)

Experience

1. National University of Ireland, Galway, School of Physics, NCLA (October 2019 – Present)

Research Assistant (EU Interreg AtlanticKET Med Funded Project); Dr. Ger O'Connor

- ❖ Advanced manufacturing test bed involving nanolasers, metal printing, and biomaterial deposition, microfluidics, and microelectronics
 - 3 modules: one for lasering patterns, another for printing metals followed by sintering, a third for spraying and micro-dropping biomaterials.
 - Train others wishing to employ the machine in their research/industrial developments. Document procedures so anyone can execute procedures to develop their intended product. Produce plans for biomedical applications (organ-on-a-chip, etc.)

Skills: Coding (Aerobasic); Laser Use; Organ/System-on-a-Chip; Metal Printing; Hydrogel Use; Technical and Manual Writing; Work with International Partners; Integrated System Control and Automation; Experimental Design and Execution; Atomic Force Microscopy

2. National University of Ireland, Galway (December 2018 – August 2019)

Master's Thesis; Dr. Eimear Dolan

- ❖ Optimization and characterization of a minimally-invasive, left ventricular drug delivery device for post-myocardial infarction application
 - Determine the mechanical contribution supplied by the device to the left ventricle, and the potential effects this may hold on remodeling.
 - Determine if the method of action for remodeling prevention also occurs via revascularization of the infarct and surrounding regions.

Skills: Autodesk Inventor; Device Burst Pressure Testing; Histological Analysis; ImageJ; Medical Device Production; Zwick Analysis; Experiment Design and Execution, Animal Tissue Handling

3. University of Maryland, Baltimore County (September 2015 – May 2018)

Undergraduate Research Assistant; Dr. Lee Blaney

- ❖ Remove, isolate, & precipitate phosphorus from chicken litter via water chemistry techniques

Skills: Dilutions; UV-Vis Spectroscopy; pH Reader; FlameAA; Scientific Communication Skills

4. East Carolina University, Biomedical Simulations (May 2017 – July 2017)

Summer Undergraduate Researcher; Dr. Stacey Meardon

- ❖ Use vector coding (MATLAB) to quantify relationship between limb segments while running
- ❖ Examine the relationship between coupling angle variance and stress on tibia during running

Skills: MATLAB; Statistical Analysis; Analysis of Force Plate Data; Microsoft Office

5. Center for Environmental Implications of Nanotechnology, CEREGE (May 2016 – July 2016)

Summer Undergraduate Researcher; Dr. Melanie Auffan

Publications and Conferences

- ❖ Shashvatt, U.; Benoit, J.; Aris, H.; Blaney, L. CO₂-assisted phosphorus extraction from poultry litter and selective recovery of struvite and potassium struvite. *Water Research* 143, 19-27, 2018.
- ❖ Shashvatt, U.; Aris, H.; Blaney, L. Evaluation of animal manure composition for protection of sensitive water supplies through nutrient recovery processes. Book chapter in “Chemistry and Water: The Science Behind Sustaining the World’s Most Crucial Resource” edited by Satinder Ahuja (Elsevier), 2017.
- ❖ Aris, H.; Shashvatt, U.; Blaney, L. Characterization of CMI-7000 Membrane for Implementation in Resource Recovery Systems. UMBC Undergraduate Research and Creative Achievement Day (Baltimore, MD), April 25, 2018.
- ❖ Aris, H.; Meardon, S. Implementation of Vector Coding to Relate Coordination Variability and Tibia Stress. BMES Annual Conference (Phoenix, AZ), October 11-14, 2017.
- ❖ Aris, H.; Shashvatt, U.; Benoit, J.; Blaney, L. Maximizing Phosphorus Recovery from Chicken Litter in a Continuous Process. UMBC Undergraduate Research and Creative Achievement Day (Baltimore, MD), April 26, 2017.
- ❖ Aris, H.; Auffan, M.; Thiery, A. Comparative Study of the Interactions between Encrusted *Chara aspera* and Unencrusted *Nitellopsis optusa* with Metal Nanoparticles. Center for Environmental Implications of Nanoparticles Conference (Durham, NC), July 29, 2016.
- ❖ Aris, H.; Shashvatt, U.; Benoit, J.; Blaney, L. Recovery of Nutrients from Chicken Litter to Create a Slow-release Fertilizer. UMBC Undergraduate Research and Creative Achievement Day (Baltimore, MD), April 27, 2016.

Honors and Awards

- ❖ Center for Women in Technology (CWIT) Scholar
- ❖ Undergraduate Research Award (URA) Scholar (2016-2018)
- ❖ Tau Beta Pi Member (Honor Society for Top 8% of Undergraduate Engineering Class)
- ❖ Marine and Renewable Energy Ireland Grant Recipient for Renewable Energy Project
- ❖ National University of Ireland, Galway Grant Recipient for Renewable Energy Project
- ❖ Engineering Class of 2018 Leadership Award

Leadership Experiences and Volunteer Work

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| ❖ NUIG Energy Society President | August 2019 – Present |
| ❖ Galway Energy Summit 2019 Marketing Division Leader | January 2019 – May 2019 |
| ❖ Center for Women in Technology Student Council President | May 2017 – May 2018 |
| ❖ Varsity Cross Country and Track and Field Athlete | August 2014 – May 2018 |
| ❖ Conservation Galway | August 2018 – Present |
| ❖ Judge for Student (REEL) Science Video Competition | October 2018 |
| ❖ Set up week long free medical clinics in Latin America | August 2014 – May 2018 |
| ❖ Mentored high school girls aspiring to be engineers | September 2014 – September 2017 |
| ❖ Volunteer Manager for local youth sports teams | August 2005 – August 2018 |

Extracurricular Professional Development

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| ❖ Society of Women Engineers (SWE) | August 2014 – Present |
| ❖ Biomedical Engineering Society | July 2017 – Present |
| ❖ Green Energy Festival Director | August 2019 – Present |
| ❖ NUIG Engineering Society | August 2018 – Present |