

EDUCATION

Drexel University, Philadelphia, PA

Ph.D. Candidate in Materials Science & Engineering June 2013 – Present
NSF GRFP Fellow, 2013 – 2016 GPA: 3.84
David L. Boren Fellow to South Korea, 2016 - 2017
Whitaker International Fellow to South Korea, 2016 - 2017

M.S. in Biomedical Engineering Graduated June 2016
M.S. in Materials Science & Engineering Graduated December 2014

B.S. in Materials Science & Engineering Graduated June 2013

Pennoni Honors College GPA: 3.75, Magna Cum Laude
Minors: Chemistry & Business Administration

Areas of Concentration: Nanotechnology & Biomaterials

RESEARCH EXPERIENCE

Molecular Imaging Laboratory, Korea Institute of Science and Technology 2016 – 2017
Center for Theragnosis
Advisor: Dr. Kwangmeyung Kim

- Macrophage-targeted drug delivery system for the treatment of collagen type-I-induced arthritis in mice

Biomaterials and Regenerative Medicine Laboratory, Drexel University 2014 – Present
School of Biomedical Engineering, Science, and Health Systems
Advisor: Dr. Kara Spiller

- Development of a novel nanodiamond-based drug delivery system for modulating inflammatory behavior 2014 – Present

A.J. Drexel Nanomaterials Institute, Drexel University 2008 – Present
College of Engineering
Advisor: Dr. Yury Gogotsi

- Nanoporous carbons as medical adsorbents 2013 – 2016
 - In collaboration with the University of Brighton (UK)
- Development of a nanodiamond-based drug delivery system for targeting and treating brain tumors 2012 – Present
 - In collaboration with the Shanghai Advanced Research Institute (China)
- Antibiotic-adsorbed nanodiamond as a platform to combat biofilm formation 2009 – 2016
 - In collaboration with Thomas Jefferson University (USA)
- De-aggregation of nanodiamond powders using salt-assisted attrition milling 2008 – 2009

SELECTED HONORS AND AWARDS

- **Whitaker International Fellow (South Korea, November 2016 - August 2017)**
- **David L. Boren Fellow (South Korea, August - November 2016)**
- **NSF GRFP Recipient (2013 - 2016)**
- Global Ambassador for the World Association for Cooperative & Work-Integrated Education Certificate (2015)
- Who's Who Among Students in American Universities & Colleges (2011, 2013)
- ASM International Philadelphia Chapter Scholarship (2011)
- Drexel Alumni Association Legacy Scholarship (2010)
- William F. Mitchell Endowed Scholarship for Students in the Accelerated B.S./Ph.D. Program (2009, 2012)

TECHNICAL SKILLS

- **Material characterization:** UV-visible spectrophotometry, Fourier-transform infrared spectroscopy, scanning electron microscopy, gas sorption, dynamic light scattering, zeta potential measurements
- **Biological characterization:** Confocal and fluorescence microscopy, real-time polymerase chain reaction, plate reader, enzyme-linked immunosorbent assay, Nanostring, Masson's trichrome staining
- **Cell culture and differentiation:** Aseptic technique, primary and immortal human macrophage cell lines, primary and immortal murine macrophage cells
- **Animal experimentation:** Real-time and *ex vivo* infrared imaging, *ex vivo* harvesting of organs and joints

PUBLICATIONS

1. Pentecost, A., Mochalin, V., Wei, C., Guo, F., Gogotsi, Y. Surface-modified nanodiamond for the treatment of brain tumors. In preparation.
2. Cheng, X.-B., Zhao, M., Chen, C. Pentecost, A., Maleski, K., Mathis, T., Zhang, X.-Q., Zhang, Q., Jiang, J., Gogotsi, Y. Nanodiamonds suppress the growth of lithium dendrites. *Nature Communications*. Accepted July 2017.
3. Pentecost, A., Gogotsi, Y., Spiller K. Anti-inflammatory effects of octadecylamine-functionalized nanodiamond on primary human macrophages. *Biomaterials Science*. Submitted April 2017. Under revision.
4. Pentecost, A., Lurier, E., Spiller K. Nanoparticulate systems for controlling monocyte/macrophage behavior. In *Microscale Technologies for Cell Engineering*. Springer, 2015.
5. Mochalin, V., Pentecost, A., et al. Adsorption of Drugs on Nanodiamond: Toward Development of a Drug Delivery Platform. *Molecular Pharmaceutics*, 2013. 10(10): p. 3728-3735.
6. Pentecost, A., et al., Deaggregation of Nanodiamond Powders Using Salt- and Sugar-Assisted Milling. *ACS Applied Materials & Interfaces*, 2010. 2(11): p. 3289-3294.

SELECTED PRESENTATIONS AND POSTERS

1. Pentecost, A., Gogotsi, Y., Spiller, K. “Macrophage-targeted drug delivery system for the treatment of rheumatoid arthritis.” *2017 Society for Biomaterials Annual Meeting and Exposition*, 2017, Minneapolis, MN. [Presentation]
2. Pentecost, A., Gogotsi, Y., Spiller, K. “Development of a novel nanodiamond-based drug delivery system for the treatment of chronic inflammation.” *Materials Research Society Spring Meeting*, 2016, Phoenix, AZ. [Presentation]
3. Pentecost, A. “International Collaborations and Equity in Science Research to Solve World Problems.” *8th Annual Student Conference on Global Challenges: Technology*, 2015. Drexel University. Philadelphia, PA. [Presentation]
4. Pentecost, A., Mochalin, V., Hickok, N., Forsberg, F., Gogotsi, Y. “Adsorption and desorption of drug-adsorbed nanodiamond delivery systems.” *Materials Research Society Spring Meeting*, 2012, San Francisco, CA. [Presentation]

SELECTED PROFESSIONAL SERVICE AND MEMBERSHIPS

<i>Student Global Advisory Board</i>	2013 – Present
• Founding President (2013 - 2016)	
<i>Drexel Graduate Women in Science and Engineering</i>	2013 – Present
• Secretary (2015 – 2016)	
<i>Materials Research Society (Drexel chapter)</i>	2009 – Present
• Vice President (2013 - 2016)	
<i>Alpha Sigma Mu Materials Engineering Honors Society (Drexel chapter)</i>	2011 – Present
<i>Tau Beta Pi National Engineering Honors Society (PA-Z chapter)</i>	2010 – Present
• Alumni Advisor (2013 – Present)	
• President (2011-2012)	
• Treasurer (2010-2011)	
<i>Material Advantage (Drexel chapter)</i>	2008 – Present
• President (2010-2012)	

TEACHING EXPERIENCE

<i>Chemistry Tutor, Tutor.com</i>	2014 – 2015
<i>Teaching Assistant, Drexel University</i>	Fall 2013
• Advanced Materials Laboratory (MATE 280)	
<i>Grader, Drexel University</i>	2011 – 2013
• Thermodynamics of Materials (MATE 240), Kinetics of Materials (MATE 245), and Defects in Solids (MATE 341)	
<i>Learning Center Tutor, Drexel University</i>	2009 – 2011
• Chemistry, Algebra, Calculus, and Physics	

MENTORSHIP EXPERIENCE

- Graduate student mentor to Nicholas Pescatore, B.S./M.S., MSE (2014 - 2016)
- Research mentor to Ennio Villaflor-Tanakatsubo – M.P.H., (2013-2014)
- Research mentor to Emem Okoh – B.S., MSE (2012-2014)
- STAR Scholars mentor to Patrick Anstine - B.S., MSE (2010)