

# Alexander Prossnitz

Pronouns: he/him/his

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3946 W Stevens Way NE, Molecular Engineering and Sciences, Seattle, WA 98105

## Education:

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- University of Washington, Seattle, WA
  - Ph.D. Bioengineering, specialization Molecular and Cellular Engineering Expected 2022
  - Research Interests: Polymer Chemistry, Drug Delivery, and Biomaterials
- Case Western Reserve University, Cleveland, OH
  - B.S. Polymer Science and Engineering, Minor Biomedical Engineering May of 2016
    - 4.0 GPA *Summa Cum Laude*

## Research Experience:

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### NSF Graduate Research Fellow, *University of Washington*

*Fall 2016 – Present*

Advisor: Dr. Suzie Hwang Pun

- Synthesis and characterization of anionic polymers to selectively target diseased kidneys
- Design and development of unimolecular polymers for drug delivery to diseased kidneys
- Formulation of stimuli-responsive, covalently conjugated, and drug loaded polymeric micelles for delivery of antioxidants
- Center for Intracellular Delivery of Biologics lab manager

### Undergraduate Research Assistant, *Case Western Reserve University*

*Fall 2014 – Spring 2016*

Advisor: Dr. Jonathan Pokorski

- Explored peptoids as a treatment of type 1 diabetes
  - Synthesized peptoid library and characterized materials with Matrix Assisted Laser Desorption Ionization (MALDI) and High-Performance Liquid Chromatography (HPLC)

### Nanoscience and Microsystems REU, *University of New Mexico*

*Summer 2014*

Advisor: Dr. Jeffrey Brinker

- Assessment of bacterial membrane permeability with mesoporous cationic silica nanoparticles
  - Technical Skills: Imaging (TEM, SEM, confocal microscopy, and fluorescence microscopy), flow cytometry, and bacterial cell culture

## Publications:

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- **Prossnitz AN** and Pun SH. *Modulating boronic ester stability with tertiary amines for controlled release of polyphenolic drugs*. In preparation. **2021**
- Herpoldt KL, Sappington I, López CL, Pham MN, Srinivasan S, Netland J, Montgomery KS, Roy D, **Prossnitz AN**, Pepper M, Convertine AJ, Stayton PS, and King NP. *Macromolecular cargo encapsulation via in vitro assembly of engineered two-component protein nanoparticles*. In preparation. **2021**
- Shixian L, Sylvestre M, **Prossnitz AN**, Yang LF, and Pun SH. *Design of Polymeric Carriers for Intracellular Peptide Delivery in Oncology Applications*. Chemical Reviews. **2021**
- Lamm RJ\*, Pichon TJ\*, Huyen F, Wang X, **Prossnitz AN**, Manner K, White NJ and Pun SH. *Optimizing the polymer structure and synthesis method of PolySTAT, an injectable hemostat*. ACS Biomaterials Science and Engineering, **2021**.
- Tran JD, Mikulec SN, Calzada OM, **Prossnitz AN**, Ennis AF, Sherwin WJ, Magsumbol AS, Jameson A, and Schellinger JG. *Microwave-Assisted Reversible Addition-Fragmentation Chain Transfer Polymerization of Cationic Monomers in Mixed Aqueous Solvents*. Macromolecular Chemistry and Physics, **2019**
- Lee DC, Lamm RJ, **Prossnitz AN**, Boydston AJ, and Pun SH. *Dual polymerizations: untapped potential for biomaterials*. Adv Healthcare Materials, **2019**.

- **Prossnitz AN\***, Liu GW\*, Eng DG, Cheng Y, Subrahmanyam N, Pippin JW, Lamm RJ, Ngambenjawong C, Ghandehari H, Shankland SJ, and Pun SH. *Glomerular disease augments kidney accumulation of synthetic anionic polymers*. *Biomaterials*, **2018**.

## Conference Proceedings and Presentations:

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- **AN Prossnitz**, SH Pun. Engineering Polymeric Micelles for Delivery of Polyphenolic Drugs. University of Washington, Biomaterials Seminar. 2021 (Talk)
- **AN Prossnitz**, SH Pun. Stimuli-Responsive Boronic Acid Micelles for Controlled Drug Delivery. University of Washington, Super Polymer Science Seminar. 2019 (Talk)
- **AN Prossnitz\***, GW Liu\*, DG Eng, Y Cheng, JW Pippin, RJ Lamm, C Ngambenjawong, SJ Shankland, SH Pun. Polymeric materials for passive kidney targeting. University of Washington, Biomaterials Seminar. 2018 (Talk)
- **AN Prossnitz\***, GW Liu\*, DG Eng, Y Cheng, JW Pippin, RJ Lamm, C Ngambenjawong, SJ Shankland, SH Pun. Glomerular disease augments kidney accumulation of synthetic anionic polymers. *Polymers in Medicine and Biology*, Napa, CA, 2018. (Poster)
- **AN Prossnitz\***, GW Liu\*, DG Eng, Y Cheng, JW Pippin, RJ Lamm, C Ngambenjawong, SJ Shankland, SH Pun. Glomerular disease augments kidney accumulation of synthetic anionic polymers. Society for Biomaterials, Seattle, WA, 2018. (Poster)

## Teaching:

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- Lead Climbing Instructor, *UWild, University of Washington* *Fall 2019*
- Graduate Teaching Assistant: Controlled Release *Winter 2018*
- Undergraduate Teaching Assistant: Polymer Chemistry *Fall 2015*
- Head Public Forum Coach of SWSOI Speech and Debate Camp *Summer 2013*

## Service:

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- MoES department Diversity, Equality and Inclusion Committee *Summer 2020 - Present*
  - *Member*, Educational Subcommittee
  - Organized DEI book club *Spring 2021 - Present*
- Super Polymer Science Seminar, *Founder and Organizer* *Fall 2019 - Present*
- Outreach activities *Fall 2018 - Present*
  - Guest lecturer in 3<sup>rd</sup> grade class, *discussing COVID and vaccines*
  - Laboratory tours for high school students
  - Nanodays, *public event at the Pacific Science Center*

## Scholarships, Honors, Awards and Certificates:

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- Outstanding Poster Award (Top Prize), *Society for Biomaterials, Seattle, WA, 2018*.
- Outstanding Poster Award 1<sup>st</sup> Place, *Polymers in Medicine and Biology, Napa, CA, 2018*.
- NSF Graduate Research Fellowship, *National Science Foundation*
- Outstanding Senior awarded to Case students with the highest academic record at graduation
- Outstanding Junior awarded to Case students with the highest academic record after 5 semesters
- Outstanding Sophomore awarded to Case students with the highest academic record after 3 semesters
- NSF REU Fellowship, *Nanoscience and Microsystems, University of New Mexico*
- Case Western Reserve University Scholarship, *merit scholarship for undergraduate studies*