

Curriculum Vitae

Ameya R. Narkar, Ph.D.

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Education

Ph.D., Biomedical Engineering, Michigan Technological University (MTU), Houghton, MI, 2018
M.S., Biomedical Engineering, Michigan Technological University, Houghton, MI, 2015
B.S., Instrumentation Engineering, Mumbai University, India, 2013

Professional Positions

Mar 2020 – present Postdoctoral Scholar, Syracuse Biomaterials Institute, Syracuse University, NY
Syracuse, NY
Sept 2018 – Mar 2020 Postdoctoral Scholar, Department of Chemistry, University of Central Florida
(UCF) Orlando, FL

Honors/Awards

2020 Selected by the Graduate Dean's Awards Advisory Committee to represent Michigan
Tech in the National Competition of the CGS/ProQuest Distinguished Dissertation
Award
2019 Professional Development (Travel/Research) Award, UCF College of
Graduate Studies (\$5,000)
2019 Bhakta Rath Research Award, VP for Research, MTU (\$2,000)
2018 PhD Graduate Research Excellence Award, Biomedical Engineering Department, MTU
2018 Dean's Outstanding Scholarship Award, Biomedical Engineering Department, Graduate
School, MTU
2018, 2015 Honorable mention award for poster presentation at ACS Student Research Symposium
2017 First prize for poster presentation at ACS Student Research Symposium
2014 Awardee of the Kenneth L. Stevenson Biomedical Engineering Fellowship (\$5,000),
MTU
2016 Received grants totaling \$10,000 for the Canterbury House Student Organization, MTU
2014-present Graduate Student Government and MTU's Life Science and Technology Institute's
Travel Grants totaling \$1,000

Research Interests

Adhesive materials, tissue adhesives, tough polymers, biomimetic design, smart materials and adhesives, interfacial binding

Publications

Peer-Reviewed Publications

(* indicates corresponding author)

1. L Zhai,* **AR Narkar**, BK Ahn. “Self-healing polymers with nanomaterials and nanostructures” *Nano Today*, **30**, 100826 (2020).
2. **AR Narkar**, E Cannon, H Yildirim-Alicea, BK Ahn.* “Catechol-functionalized Chitosan: Optimized Preparation Method and its Interaction with Mucin” *Langmuir*, **35**, 16013-16023, (2019).
3. **AR Narkar**, C Kendrick, K Bellur, T Leftwich, Z Zhang, BP Lee.* “Rapidly Responsive Smart Adhesive-Coated Micropillars Utilizing Catechol-Boronate Complexation Chemistry” *Soft Matter*, **15**, 5474-5482, (2019).
4. H Meng, PK Forooshani, PU Joshi, J Osborne, X Mi, C Meingast, R Pinnaratip, JD Kelley, **AR Narkar**, W He, MC Frost, C Heldt, BP Lee.* “Biomimetic recyclable microgels for on-demand generation of hydrogen peroxide and antipathogenic application” *Acta Biomaterialia*, **83**, 109-118, (2019).
5. **AR Narkar**, & BP Lee.* “Incorporation of Anionic Monomer to Tune the Reversible Catechol–Boronate Complex for pH-Responsive, Reversible Adhesion” *Langmuir*, **34**, 9410-9417, (2018).
6. **AR Narkar**, JD Kelley, R Pinnaratip, and BP Lee.* “Effect of ionic functional groups on the oxidation state and interfacial binding property of catechol-based adhesive” *Biomacromolecules*, **19**, 1416-1424, (2017).
7. **AR Narkar**, B Barker, M Clisch, J Jiang and BP Lee.* “pH responsive and oxidation resistant wet adhesive based on reversible catechol-boronate complexation” *Chemistry of Materials*, **28**, 5432-5439, (2016).
8. Y Li, H Meng, Y Liu, **AR Narkar** and BP Lee.* “Gelatin microgel incorporated poly(ethylene glycol)-based bioadhesive with enhanced adhesive property and bioactivity” *ACS Applied Materials & Interfaces*, **8**, 11980-9, (2016).
9. BP Lee,* **AR Narkar**, R Wilharm. “Effect of metal ion type on the movement of hydrogel actuator based on catechol-metal ion coordination chemistry” *Sensors and Actuators B: Chemical*, **227**, 248-354, (2016).
10. X Xiang, F Long, **AR Narkar**, RE Kinnunen, R Shahbazian-Yassar, BP Lee, PA Heiden.* “Is there value in chemical modification of fish scale surfaces?” *Journal of Applied Polymer Science*, **133**, 42868, (2016).
11. BP Lee,* M-H Lin, **AR Narkar**, S Konst, R Wilharm. “Modulating the movement of hydrogel actuator based on catechol-iron ion coordination chemistry” *Sensors and Actuators B: Chemical*, **206**, 456-462, (2015).

Conference Abstracts/Proceedings

1. **AR Narkar**, K Ahn “Understanding the bioadhesion of chitosan-catechol polymers” *Abstracts of Papers of the American Chemical Society*, 257.
2. **AR Narkar**, K Ahn. “Mussel-Inspired, Tough Elastomer with Dynamic Bonding” 2019 AIChE Annual Meeting.

3. J Vongnaraj, **AR Narkar**, K Ahn. “Tough Hydrogel Network Based on Calcium-Crosslinked Sulfur Salt” 2019 AIChE Annual Meeting.
4. **AR Narkar**, Chito Kendrick, Kishan Bellur, Timothy Leftwich, and Bruce P. Lee.* “Evaluating the Enhanced Adhesion, Rapid Switching and Reversibility of Adhesive Hydrogel-Coated Polydimethylsiloxane Micropillars” *Proceedings of the 42nd Annual Meeting of the Adhesion Society*, (2019).
5. **AR Narkar**, JD Kelley, R Pinnaratip, and BP Lee.* “Effect of ionic functional groups on the oxidation state and interfacial binding property of catechol-based adhesive” *Proceedings of the 6th World Congress on Adhesion and Related Phenomena (WCARP) in conjunction with the 41st Annual Meeting of the Adhesion Society*, (2018).
6. **AR Narkar**, B Barker, M Clisch, J Jiang, BP Lee.* “pH Responsive Hydrogel Adhesives based on Reversible Catechol-Boronic Acid Complexation” *Proceedings of the 39th Annual Meeting of the Adhesion Society*, (2016).

Presentations

National Conferences - Invited Presentation

1. “pH Responsive, Adhesive Hydrogels based on Reversible Catechol-Boronic Acid Complexation” presented at *Adhesive and Sealant Council Spring Convention and EXPO*, April 2016, New Orleans, LA.

National Conferences

1. ‘Understanding the Mucoadhesion of Catechol- Conjugated Chitosan and Polyethylenimine’ *American Chemical Society Annual Meeting*, April 2019, Orlando, FL, Oral Presentation.
2. ‘Rapid and Reversible Adhesion of Catechol and Boronic Acid Coated – Micropillars’ *42nd Annual Meeting of the Adhesion Society*, February 2019, Hilton Head, SC, Oral Presentation.
3. “Effect of Ionic Functional Groups on the Oxidation State and Interfacial Binding Property of Catechol- Based Adhesive” *6th World Congress on Adhesion and Related Phenomena and 41st Annual Meeting of the Adhesion Society*, February 2018, San Diego, CA, Oral Presentation.
4. “pH Responsive Hydrogel Adhesives based on Reversible Catechol-Boronic Acid Complexation” *2016 Annual Meeting of Adhesion Society*, February 2016, San Antonio, TX, Oral Presentation.

Mentorship and Teaching

UCF

- Advised undergraduate students Dalyn Valentin, Ismail Turker, Mac McHale, Pedro Rivera on their undergraduate seminar presentations.
- Advised Mac McHale, Hatice Yildirim, Erica Mancinelli, Elmira Cannon on their undergraduate research reports.

MTU

- BE 3400- Experimental Techniques in Biomedical Engineering (Fall 2015, Fall 2016)
 - 1) Planning and setting up experiments for the lab
 - 2) Explaining how to conduct the experiment – expected outcome
 - 3) Assisting students when they faced obstacles or anticipating if students needed help
 - 4) Grading students’ lab reports and holding office hours to resolve their questions or concerns
 - 5) Coordinating and working with co-teaching assistant on certain occasions for planning experiments, scheduling, and accommodations
- BE 3700- Biomedical Instrumentation (Spring 2016)
 - 1) Grading quizzes, assignments, and homework

- 2) Office hours for solving students' questions
- 3) Gave a lecture on standards and regulations in biomedical engineering

Professional Activities

- Editorial board - MDPI *Crystals*

Biomedical Engineering (BME) Education - Fall 2014 and Fall 2017

- Volunteered to present research from my research group (Bruce P. Lee, MTU) during Engineering Explorations for freshmen students who had not decided their major. This was a yearly event held by the college of Engineering to help undeclared engineering undergrads to find out more about the different research being conducted by the various groups in the department.

Service to the Adhesion Society

- Co-chaired sessions bioadhesion division –2019 and 2018
2019: *42nd Annual Meeting of the Adhesion Society*, February 2019, Hilton Head, SC
2018: *6th World Congress on Adhesion and Related Phenomena and 41st Annual Meeting of the Adhesion Society*, February 2018, San Diego, CA

Journal Peer Review

Nature Communications (1), Acta Biomaterialia (2), Advanced Intelligent Systems (2), Journal of Materials Chemistry B (1), Frontiers in Chemistry (1), Frontiers in Materials (1), Macromolecular Bioscience (1), MDPI Gels (1), MDPI Crystals (1), MDPI Bioengineering (1), MDPI Molecules (1), MDPI Materials (1), Applied Materials & Interfaces (1), Macromolecular Chemistry and Physics (1), Langmuir (1), PLOS One (1), ChemNanoMat (1), Nanoscale (1), Sensors and Actuators A: Physical (1), Journal of Membrane Science (1), Materials Chemistry and Physics (1), Cell Press (1), Waste and Biomass Valorization (1), Polymer (1), Reactive and Functional Polymers (1), Journal of Cleaner Production (1), Journal of the Mechanical Behavior of Biomedical Materials (1)

University Level Services

- Reviewer – UCF Internal Seed Funding Program: ER1, Exploratory Research Award
- Judge at 2019 Graduate Research Forum- UCF College of Graduate Studies
- Designed poster for UCF Open House- In association with ACS Spring meeting March-April 2019
- University Campus Climate Survey Committee at MTU: Spring 2016- Fall 2017
- Treasurer- Canterbury House Student Organization at MTU: Fall 2015- Summer 2018
- Judge at Senior Design Expo at MTU: Spring 2016
- Co-conducted a poster advice forum for minorities in STEM at MTU