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Engineering & Scientific Consulting

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Professional Profile

Dr. Tutoni is a chemist specializing in polymer science and materials chemistry, with a particular focus on leveraging advanced characterization techniques to uncover structure-property relationships. Her expertise spans a broad array of techniques, including differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), X-ray scattering (WAXS/SAXS), nuclear magnetic resonance spectroscopy (NMR), optical microscopy, scanning electron microscopy (SEM), and UV-Vis spectroscopy. Through the application of these techniques and a fundamental understanding of polymer chemistry, Dr. Tutoni investigates the behavior and performance of polymeric materials in industries including buildings/construction, adhesives and sealants, personal electronics, medical devices, water and gas pipe, and more.

Prior to joining Exponent, Dr. Tutoni was a graduate research assistant at Duke University's Department of Chemistry. At Duke, she was awarded the National Science Foundation (NSF) graduate research fellowship. Her doctoral research involved the design and development of bioresorbable hydrogel microparticles aimed at advancing tissue engineering and drug delivery systems. This work encompassed small molecule and polymer synthesis, microfluidic fabrication, and the in-depth characterization of soft materials.

Academic Credentials & Professional Honors

Ph.D., Chemistry, Duke University, 2024

National Science Foundation Graduate Research Fellowship (2020-2024)

Peter W. Jeffs Fellowship (2024)

Professional Affiliations

American Chemical Society (2024 to Present), member

Publications

Tutoni, G.; McDonald, S. M.; Zhong, R.; Lu, A.; Huang, T. J.; Becker, M. L., "Microfluidic Assembly of Degradable, Stereocomplexed Hydrogel Microparticles." Journal of the American Chemical Society, 2024, 146 (21) 14705-14714.

Smith, B. N.; Meikle, H.; Doherty, J. L.; Lu, S.; Tutoni G.; Becker, M. L.; Therien, M. J.; Franklin, A. D., (2022). "Ionic dielectrics for fully printed carbon nanotube transistors: impact of composition and induced stress." Nanoscale, 2022, 14, 16845-16856.

Tutoni, G.; Becker, M. L., "Underexplored Stereocomplex Polymeric Scaffolds with Improved Thermal and Mechanical Properties." Macromolecules, 2020, 53 (23), 10303-10314. (Journal Cover)

Presentations

Tutoni G, McDonald SM, Zhong R. Lu A, Huang TJ, Becker ML. Microfluidic Assembly of Degradable, Stereocomplexed Hydrogel Microparticles. Oral Presentation. ACS Spring Meeting, New Orleans, LA, 2024.

Tutoni G, McDonald SM, Zhong R, Lu A, Huang TJ, Becker ML. Towards Tunable, Degradable, Stereocomplexed Hydrogel Microparticles via Microfluidic Assembly. Poster Presentation. Duke Soft Matter Conference, Durham, NC, 2024.

Tutoni, G, McDonald SM, Zhong R, Lu A, Huang TJ, Becker ML. Towards Tunable, Degradable, Stereocomplexed Hydrogel Microparticles via Microfluidic Assembly. Poster Presentation. Triangle Student Research Competition, Research Triangle Park, NC, 2023.

Tutoni G, McDonald SM, Zhong, R, Lu, A, Huang TJ, Becker ML. Towards Tunable, Degradable, Stereocomplexed Hydrogel Microparticles via Microfluidic Assembly. Poster Presentation. Duke Chemistry Research Symposium, Durham, NC, 2023.

Tutoni G, Zhong R, Huang, TJ, Becker, ML. Towards Tunable, Degradable, Stereocomplexed Hydrogel Microparticles via Microfluidic Assembly. Oral Presentation. Duke Chemistry Research Symposium, Durham, NC, 2022.

Tutoni G, Becker, ML. Concomitant Control of Network Properties in Fully Degradable Hydrogels using Stereocomplexation. Oral Presentation. Duke Soft Matter Symposium, Durham, NC, 2021.