Andrew White, Ph.D.

*Assistant professor of chemical engineering, University of Rochester*

Andrew White has quickly established himself as a rising star—both as a researcher and teacher—since joining the faculty at the University of Rochester in 2015.

“He has distinguished himself as one of the most creative and accomplished junior faculty,” says Mitchell Anthamatten, chair of the Department of Chemical Engineering.

White’s research uses molecular simulation and machine learning to design new materials. His research group has been funded with $3 million in grants, including a prestigious National Science Foundation CAREER award and Outstanding Investigator Award from the National Institutes of Health.

His work has included the development of a mathematical model to monitor the spread of COVID-19. One of his proudest accomplishments: an anti-fouling coating made entirely from biodegradable and naturally occurring compounds, which has been applied for biological implants, drug design, and detecting cancer biomarkers.

White has also written the first textbook on deep learning for chemistry and materials science, which is free and available online.

As a result of his “extraordinarily interdisciplinary set of interests and contributions, spanning chemical engineering, materials science, data science, and biophysics,” White is “recognized as a leading figure in the emerging interdisciplinary area of AI-driven materials design,” says Mujdat Cetin, the Robin and Tim Wentworth Director of the Goergen Institute for Data Science.

White received the University’s Curtis Award for Nontenured Teaching Excellence in 2019. A class he created on statistics and numerical analysis “transformed a program weakness into a strength,” says Anthamatten. This required writing open-source course notes because this was a first of its kind course with no available textbooks.

White also collaborated with education researchers to develop an AR system that allowed students to physically move a set of 3D printed model chemical reactors and connect them with pipes to explore staging, temperature, and reactor types.

During a year spent studying abroad in Germany White experienced what it was like to struggle with language, culture, and belonging. Engineering is not just about technical skills, he tells students, but “identifying problems, collaborating with people, and communicating your solutions.”

White’s service extends beyond the lab and classroom. White helped organize data science in chemical engineering technical sessions for annual meetings of the American institute of Chemical Engineers. He is a reviewer for 16 peer-reviewed journals.

White and his wife, who have two young sons, volunteer at the Rochester Animal Shelter. His research group hosts Rochester City School District students in summer.

Asked to articulate his vision for engineering in Rochester, White states: “Engineering in Rochester should be more diverse and inclusive of BIPOC (black, indigenous and people of color) to better understand how society is affected by our decisions and the ethics that guide those decisions. This means including engineers from diverse backgrounds and cultures.”