Research Highlight…

Sam Lohse is the newest tenure-track faculty member in the Chemistry Department, and he began active research this fall with two master's students, Matthias Carroll and Jennifer Hanigan-Diebel (formerly Moore), who presented their thesis proposals to the department. Lohse's research explores the physiochemical characterization and identification of engineered nanomaterial contaminants in the environment. Specifically, the Lohse research group investigates the formation of environmental coronas around individual nanoparticles (adsorption of proteins and natural organic matter to the nanoparticle surface) and explores new strategies for the detection of nanoparticles and microplastics in the environment.

Upon arriving at CWU, Lohse (co-PI) received NSF funding to study how functionalized thiol monolayers on nanostructured surfaces influenced the fluid dynamics of nanoparticle solutions and the interactions of mixed-monolayer nanoparticles with proteins. The research is being conducted in collaboration with Colorado Mesa University and the University of Notre Dame and is being funded over two years. The Lohse research group's activities have largely been focused on these grant objectives, with Jennifer investigating the interactions between bovine serum albumin and 5 nm mixed-monolayer gold nanoparticles and Matthias investigating how 1H-NMR and FTIR spectroscopy can be used to quantify the relative ratios of different functionalized thiols displayed on the nanoparticle surface. Jennifer presented on her research at the Fall SOURCE conference. Both Jennifer and Matthias will be presenting on their research at the ACS National Meeting this spring in San Diego, CA.

As the academic environment slowly returns to normal, post-COVID, Sam is hoping to recruit more undergraduate researchers to participate in these studies and build up to a more robust research group. Sam would like to thank the very capable team of students in his evolving research group, the department faculty and staff (and everyone at Central Washington University who has been so welcoming and supportive), making this quick start to the research study possible.