

For my first year of my master in Material Science and Engineering, I would like to explore the more advanced topics related to the structures of material. This includes characterizing materials, such as getting trained on the SEM. It would also be nice to start also learning about atomic interactions, bonding characteristics, and advance defect behaviors in less idealized systems. Career-wise, I plan on keeping my fall and spring internships in the battery industry for technical chemical experience. I also plan on being accepted for a summer national lab internship for nuclear or battery modeling, so I can be exposed to advanced theoretical reasoning and computational skills. That way, I can also take some summer nuclear class at the national lab to help get my nuclear material certification completed.

As for my project, I'm working to 3D print metal and ceramic parts via fused filament fabrication (FFF). I will be testing how strong and heat-resistant they are - to see if they'd hold up in a rocket motor (H class) good enough to reach space! I get to design the experiments, make the parts myself, and collect data to compare printed materials to traditional ones. This will help me better understand how to engineer materials to match certain performances, learn more about material processing, and develop better failure analysis skills. The big goal is to help future engineers with small budgets confidently use FFF-printed parts in high temperature, high stress situations by making them more predictable.

JG