Zhengyang Liu

(612) 404-5702
liux3141@umn.edu

To whom it may concern,

I would like to be considered for the rheologist position at Avery Dennison. I got my bachelor's degree in Polymer Materials and Engineering and I am currently pursuing a doctorate degree in Chemical Engineering. I have acquired decent knowledge on polymer, rheology, simulation and soft materials during my education. After reading the rheologist job description at Avery Dennison, I found my training background a good match.

- **Rheology**: I started to learn about rheology in college 6 years ago. I was experienced in operating different rheometers, as well as interpreting the results. In graduate school, the rheology of bacterial suspensions (which is deemed as a novel soft material, "active matter") has been my focus. I developed a custom rheometer, which allow me to measure the viscosity and image the microscopic dynamics at the same time. Using this technique, I figured out the mechanisms behind the anomalous rheology. This result has been published in *Rheologica Acta*. I have also presented the result several times in both academic conferences and industry events. I believe this demonstrates my expertise in rheology.
- **Particle based simulation**: Although currently I define myself as an experimentalist, I do have strong skills in particle based simulation. I did a pure simulation research based on DPD method for my undergraduate thesis, the main result of which was later on published in *Nano Letters*. I believe this demonstrates my capability of conducting simulation research.
- **Programming**: I am a big fan of writing code. I am most familiar with MATLAB, where I did all the image analysis, data management, modeling and visualization for my publication in *Rheologica Acta*. Besides that, I learned Python out of interest, which gives me access to broader open-source tools. I learned Fortran for the simulation research. Multiple learning processes give me better understanding on coding and help me pick up other programming languages more easily.

In addition to the skills above, I can bring in the following, which can be benefitial:

- **Teamwork**: I enjoy being involved in other people's research by providing my expertise (coding, nano-fabrication and microscopy) to them and discussing with them about challenges and solutions. I am also good at identifying other people's skills (modeling and bio-techniques) and incorporate them to my projects. These make me a good teamworker.
- **Presentation skill**: I have been attending several academic conferences and workshops during my graduate study and can effectively communicate with colleagues about my research.

I am excited about the rheologist position, where I can apply my knowledge and skills to tackle practical problems. I am looking forward to sharing more about my experience. If you have any questions, please feel free to contact me (at liux3141@umn.edu).

Sincerely,
Zhengyang Liu