

Christine Leu: Individual Contribution Page

Spring 2016 Contributions

I am a Junior in the College of Engineering. I am currently perusing a Bachelors of Science in Chemical Engineering, and I plan to continue and work for a Masters in Engineering degree. This is my fourth semester as a undergraduate researcher for AguaClara.

During my Sophomore year, I was on the Chemical Dose Controller (CDC) team. The work that I contributed to the CDC team included establishing a set up manual, and redesigning the constant head tank to increase structural integrity and accuracy. Throughout the year, I ran numerous tests for determining fluid head-loss and doser accuracy with different system iterations. Also, I looked into locally sourced materials to reduce the manufacturing costs. Finally, I looked into expanding our technology to other countries like India.

During my Junior year, I was placed on the Countercurrent Stacked Floc Blanket Reactor (CSFBR) team. The goal of this team is to ultimately design a series of reactors that can remove arsenic and fluoride from contaminated water. We use Polyaluminum Chloride (PACl) as the binding agent with clay in this removal process. During my first semester, I helped draft reactor designs that would support our theory. I looked at variables such as residence time, reactor geometry, and PACl concentration to create a reasonable and applicable model. I calculated and constructed the flocculator that fed into the reactor. When the reactor was built, I helped run experiments to see the nature of the developed floc blankets. Towards the end of the semester, my team and I looked into various tracer dyes to follow the path of the PACl clay mixture. We incorporated a spectrophotometer and turbidimeter to better understand our removal effectiveness.

This semester, I am continuing my research on the CSFBR team. Our goal is to continue our work with the current design and be able to validate and reproduce test results. We are looking to maximize the PACl adsorbance rate using a blue dye within the reactor, and also altering concentrations of feed to find a maximum efficiency range. Finally, we are collaborating with other research teams in preparation for the EPA P3 competition.