

# **fcc32**

## **Felice Chan's Individual Contribution Page**

### **Spring 2013 Contributions**

As part of the flocculation and sedimentation optimization team, we are working to produce a floc blanket using a different coagulant, PACI. We will add a large diameter reactor to mix raw water and coagulant so the coagulant can stick to the clay. We are also working on placing a camera on the apparatus to monitor the production and height of the floc blanket in real time. If we develop a way to successfully build a floc blanket and find the optimal coagulant dose, we will then experiment with floc recycle.

### **Summer 2013 Contributions**

This summer we will be designing a turbulent tube flocculator to mimic what happens at full scale plants. We will follow the CEE 4540 flocculator design equations and modify them for a circular geometry. By setting a target Reynolds number and energy dissipation rate, and H/S ratio for efficient flocculation, the other dimensions of the flocculator can be determined. We will also come up with a plan for constructing the flocculator and research different materials required for fabrication.

### **Fall 2013 Contributions**

This fall we will be finalizing materials and design needed for the flocculator. After the design from Summer 2013 is finalized, we will purchase a few sample materials to determine whether they will work. A large part of the semester will be spent constructing the flocculator which involves creating a base and supports, and finding adequate clamping materials to create constrictions.

### **Spring 2014 Contributions**

This spring we will be continuing work with the turbulent flocculator. One of the first tasks we were hoping to accomplish is to try to get the air bubbles out of the flocculator. We will also be designing a SWaT system, or a settled water turbidity analysis system. The SWaT will consist of a tube sedimentation tank and a tube settler. The water will then either be analyzed with a turbidimeter or go to waste. Ultimately we hope to test floc breakup theory, to determine whether it is better to break up flocs or to let them grow.

### **Fall 2014 Contributions**

This fall we will be working on updating the turbulent tube flocculator apparatus and process controller file. We also performed a clay test to determine that the turbulent tube flocculator flows largely like a plug flow reactor with some dispersion.

### **Spring 2015 Contributions**

This semester I will be continuing work on the Turbulent Tube Flocculator subteam. We have updated our process controller method file to increment through a range of coagulant doses and we will be using this file to (hopefully) run experiments.