# cs747

## Cosme's Individual Contribution Page

### Spring 2011 - PSS team

This Spring the team will finish exploring the high velocity gradients effect on plate settler performance. Thanks to Karen , Michael and Tanya , we have been able to set a more convenient way of handling and analyzing the data. I'm training new team members to use the bench-scale setup, improving the theory: the pi ratio model and the dynamics model. Our goal is to be able to provide the necessary information for scaling plate settlers to their optimal size.

### Fall 2010 - PSS team

The fall 2010 semester was about running experiments to assess the effect of the velocity gradient (the value of the derivative of the velocity profile at the bottom plate) on plate settlers and looking at the floc roll up failure mechanism. The first experimental results showed that we had a model for predicting failure but this model was not able to estimate the magnitude of failure.

I therefore volunteer on working on a numerical model that would enable us to predict the magnitude of failure. The numerical dynamics model will explore the influences and consequences of more complex mechanisms that are possibly occurring in plate settlers.

Unfortunately, the team realized that the flow rates used for the experiments were not holding the capture velocity (the velocity of the slowest particle that can be captured). On the other hand, this may explain why we could not succeed in making the model fit predictions and mimic experimental data.

In addition to the model that predicts failure (the pi ratio ) I contributed in building a same but less conservative model that would allow the team to confirm failure with more confidence. Future experiments will confirm if the second ratio created helps or if the first pi ratio alone is sufficient in predicting plate settler's failure for the current set of experiments.

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