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**Flow Viz. – spring 2009**  
**Visualization Report #1**  
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This was my first project for this class, and to be honest I had absolutely no idea what I was going to do until about five minutes before I actually started taking pictures. My basic intent was to produce a simple, clear image of a flow phenomenon that could be recreated if I had to. I realized quickly how hard it was to actually find fluids that interact consistently with each other in interesting ways.

The setup for this image was basic; I took a shallow metal pan and placed it on top of my bathroom counter in an effort to prevent any damage, and then placed a long, narrow glass on it, which tapered slightly towards the base. My hope was that any interaction would be easier to capture in a lower-volume vessel, and the slightly narrower base would produce a more interesting visualization than just a regular glass.

To create the visualization I first took a 3% solution of hydrogen peroxide and poured it until the cup was full, save for a half-inch at the top. I then took a jar with Hibiclens, which is a 4% Chlorhexidine Gluconate solution in isopropyl alcohol (pre-mixed with colorant Red 40), and poured it slowly to the side of the glass with the stagnant H<sub>2</sub>O<sub>2</sub>. I snapped the photo about a second after the fluids began to mix, and the entire flow lasted about 15 seconds before the Hibiclens ultimately settled to the bottom of the H<sub>2</sub>O<sub>2</sub>. To light the photo, I used a combination of set-light (my bathroom light – 4x60W tungsten filament bulbs) and part of my lighting kit, which consisted of one 150w photoflood reflected off the ceiling to remove the abundance of shadows on the wall, as well as the shadow of my head on the glass.

The size of the field of view was about four to six inches, and the object was about 14 inches from the focal plane of the camera. My focal length for this particular shot was just over 55mm, and I was shooting iso400 35mm film. Lens speed was approximately 30 with an f/stop of 4.5. The camera used was a Canon 35mm EOS Rebel K2, and the film was digitally converted after the negatives had been significantly scratched. The original image I got back was a Photoshop-type (PSD), dimensions 5747x3831px and a resolution of 4000ppi (pixels per inch). I photoshopped the image somewhat after receiving it back digitally. I first did my best to scrub the image to remove the scratches from the negative and then sharpened the image. I added a slightly blue digital photo filter to make the image less yellow, and then split the image into three layers; the fluid in the glass, the glass itself, and everything else. I left the fluid in the glass more or less unaltered (aside from what was mentioned), the glass I tinted green for

effect, and I applied a high contrast layer plus a 50% satin screen over the background to keep the viewer from being distracted by what was going on in that plane. The final image was type .jpg and was scaled to 1616x1034px with a resolution of 72ppi.

The image shows that when the components of Hibiclens interact with 3% hydrogen peroxide, they form small spheres similar to how water and oil interact in suspension. I also thought it was interesting that the solution, after pooling at the bottom of the glass, had a tendency to begin to flow back up the other side of the glass, but as one fluid mass rather than many small bubbles. It reminded me slightly of an extremely slow lava lamp that's almost too cold to keep operating properly. I disliked that I couldn't show more detail in the picture, which is partially a limitation of 35mm and partly a direct consequence of mauled negatives. I think the image could have been improved by being shot from another angle, perhaps showing the reverse-cascading effect of the Hibiclens up the side of the glass. I'm not sure if this particular idea can be developed much more than that.