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Flow Visualization
October 25, 2007

Group Delta Project 1

This image was taken in the ITL lab using a Hele-Shaw Cell. Our group experimented with various combinations of oil, water, food coloring, and air. With a range of effects, I decided to choose an image using the oil and air combination.

Lit from beneath, using a clamp light with a Tungsten bulb, we placed peanut oil on the translucent surface of the Hele-Shaw Cell. The effects were created by injecting air from a tube in the center, then slowly raising and lowering a piece of transparent plexi-glass on top. The experiment dramatically illustrated the Staffman-Taylor instability and the associated finger effect.

The settings used in this image are 1/80 at f/7.1 using a Canon Rebel Xti. The film speed was set at 400 with the lens set at 46mm on a 18–55 lens. The field of view is approximately 9 inches. The 10 megapixel image was adjusted in photoshop by converting the image to grayscale, increasing the contrast, and sharpening.

From the series of experiments we tried, I was most impressed with the simple mixture of air and oil. The resulting fingers and lack of color highlighted the interface with a slight shadow. This shadow has a similar look a line drawing. In contrast to the dyed fluids, I am most drawn to this experiment that highlights the subtle beauty of a common interaction.