



Microfluidics: Droplet Formation

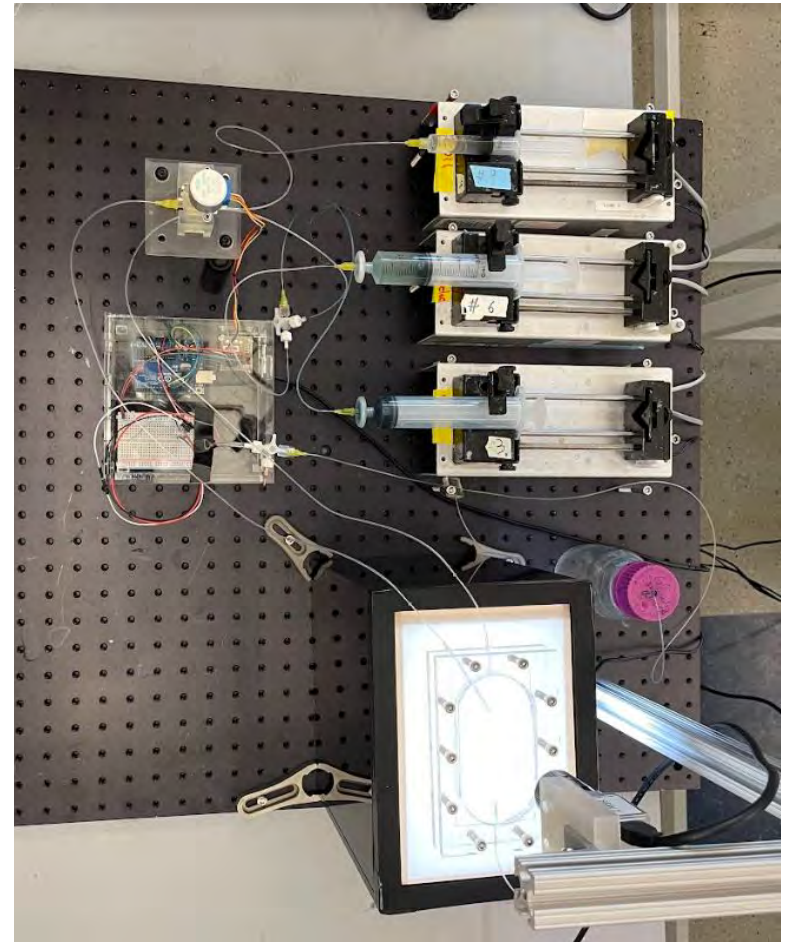
Rothiel Davis II¹, Bobby Haney & Thomas Cochard², David Weitz²

¹Florida A&M University, ²Harvard University

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My project is based on the general aspect of microfluidics which is the study of systems that can process small quantities of fluids by using tiny channels having dimensions at the microscale level. However, my focus was on droplet formation that occurs within that channel. The fluid being observed was an oil emulsion once coming into contact with a soap surfactant. We observed the activity of the droplet formed based on the geometry of the channels used which were square and circles. We measured different variables during the processes such as flowrate and pressure to see if there were any visible relationships once analyzed using the computer program MATLAB.



The set up for the experiment which includes 3 pumps (oil, solution, cleaner), pressure sensor, valve & motor, camera, and flow cell & light.

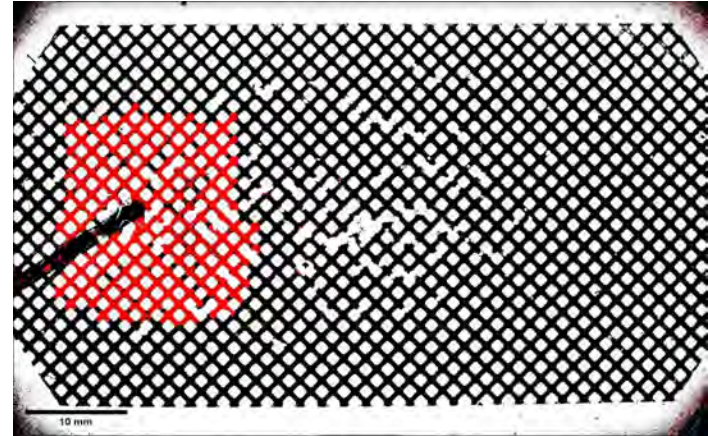
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I am Rothiel Davis II, a rising biomedical engineer senior at Florida A&M University from Chicago. I enjoy learning new skills and having the opportunity to progress more in my life academically and socially. While being in this REU it taught me more about data analysis and looking at a project as not only at an engineering perspective but also as a scientist. My mentors were a big influence in me wanting to continue my education and obtain my PhD in the bioengineering field at whatever institution I feel is the right fit for me.



Top: Screenshot of oil emulsion inside a square porous device before droplets are formed. Bottom: Photo of Rothiel Davis II