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*Does It Stick? Viscosity's Effect on Liquid Mediated Adhesion*

Liquid mediated adhesion occurs when a liquid in between two surfaces causes them to stick together. As more devices are miniaturized and improved for less power consumption, this creates a serious risk of failure. In 2008, Bhushan showed that the total adhesion force is made up of a viscous force plus a meniscus force. His model was tested at a microscopic scale. My experiments were done to test this theory on larger contacting surfaces. My hypothesis was that the adhesion force would be directly proportional to the viscosity. The actual viscous force depends on separation time; the harder you pull, the faster they separate. I could not control the separation time in the tests, so I decided to control the separation force and measure separation time. I constructed a "stickometer" to measure separation time. By using different weights, I showed that separation force is proportional to one over separation time. This means I can use a measurement of time to find the force. I then used fluids with different viscosities to show that separation time is proportional to viscosity, confirming my hypothesis. Next, I went on to verify the theory's prediction of the relationship between force and the initial distance of separation. Finally, I attempted to test the prediction that force is proportional to the contact area to the fourth power by using surfaces of different sizes. However, I had problems with particle contamination of the larger surfaces.