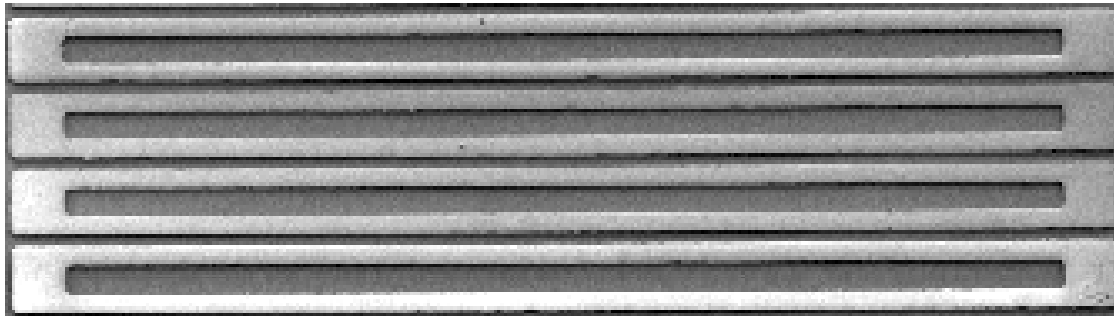
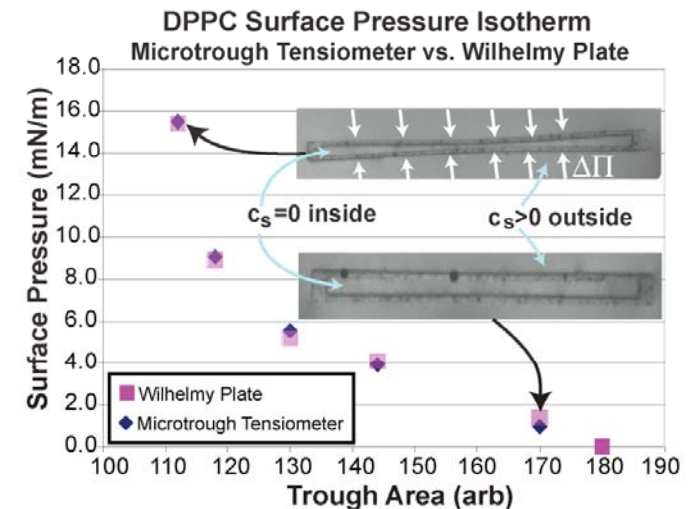


Micro-tensiometry



Microfabricated micro-tensiometers: length $L \sim 1\text{mm}$, width $\sim 20\ \mu\text{m}$ and height $\sim 20\ \mu\text{m}$.

Comparison of experimental surface pressures for micro-tensiometer vs. traditional technique



Surfactants are everywhere in nature and everyday life: animals rely on lung surfactants to breathe, and mayonnaise would separate into oil and water without them. To develop advanced multiphase polymeric materials, the efficacy of synthetic surfactants must be determined and optimized. To do so, one must measure their surface pressure without the ‘macroscopic’ quantities required for standard tensiometry. To address this challenge, the **Israelachvili, Leal and Squires** groups have developed a micro-tensiometer using microfabrication techniques. By exploiting elastic beam theory, along with known geometric and material parameters excellent agreement with traditional techniques is observed. This new and general technique significantly expands the range of interfacial measurements and greatly reduces sample size, which allows for the more efficient design, control, and study of advanced, high-interface materials.