Model Studies of Reversibly Interacting Surfaces

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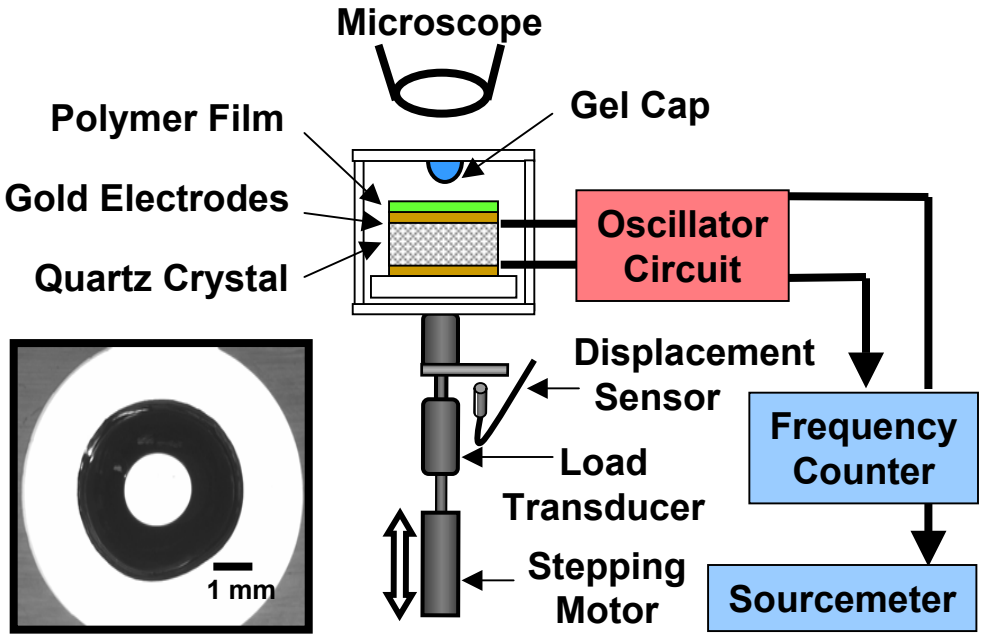
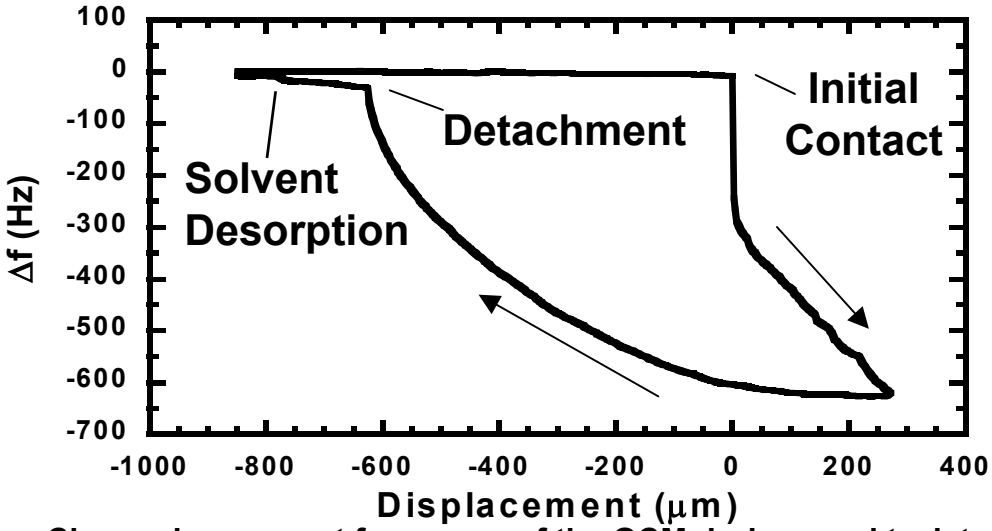
Traditional adhesion studies often make use of the probe tack test, where two objects are brought together and subsequently pulled apart while measuring the motion and forces that occur. The quartz crystal microbalance (QCM) has been used in a variety of applications due to its ability to detect mass at the nanogram level. We utilize the inherent sensitivity of the QCM in probe tack experiments that provide new insights into the interactions of a very soft materials, including biomedical hydrogels, with rigid surfaces.

Langmuir, **20**, 7083 (2004)



Apparatus for gel contact experiments using the QCM. Inset shows image of gel in contact with QCM electrode.



Change in resonant frequency of the QCM during a gel tack test.

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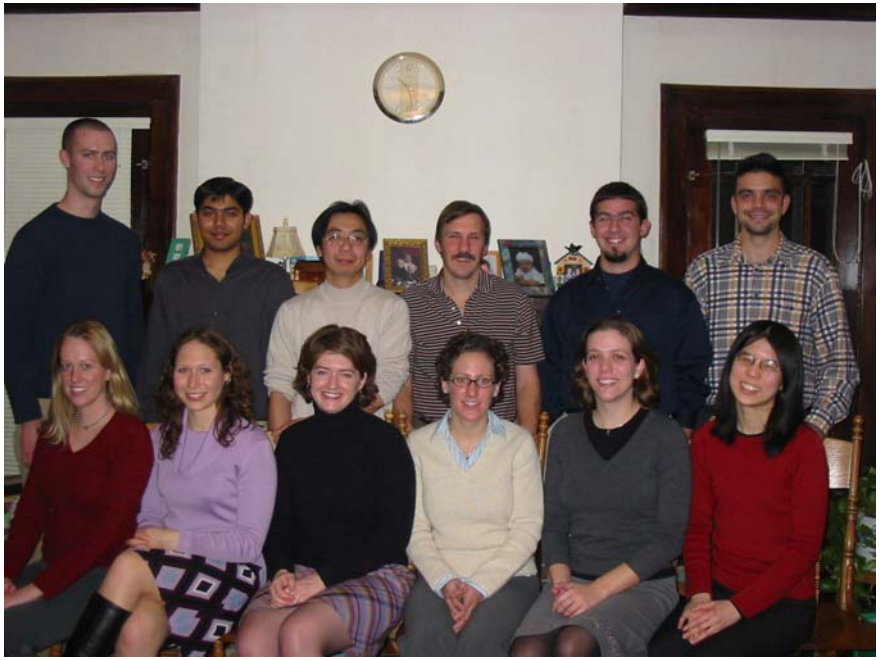

Half the students in this photograph of our research group are involved in research that is supported by this grant.

Education and Outreach

Our NSF grant is the core research grant supporting our work on polymer surfaces and interfaces, and polymer adhesion. Two students (Rebecca Webber and Elizabeth Fabbroni), have received their Ph.D.'s while involved in this project and three current Ph.D. students (Nelson Nunalee, David Brass and Chau-Jean Lin) have been involved as well. Eight Materials science undergraduates (including 5 women) have been substantially involved in this research through their capstone senior project, and several undergraduate students and high school teachers have participated through summer programs supported by NSF.