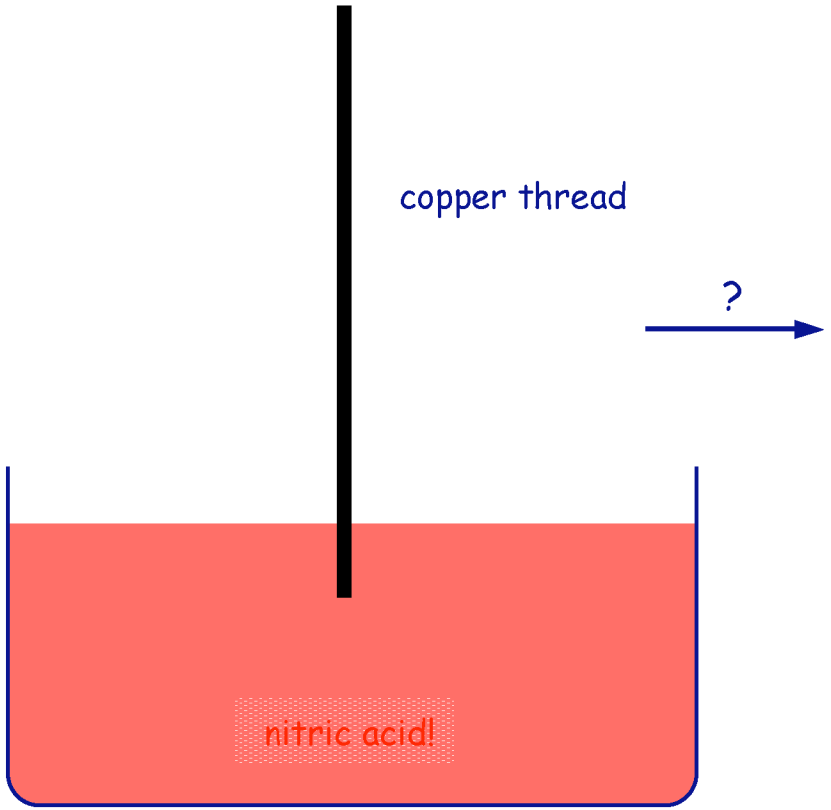
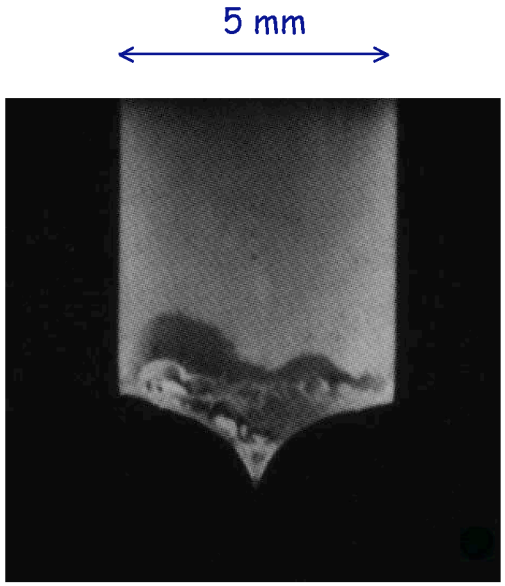
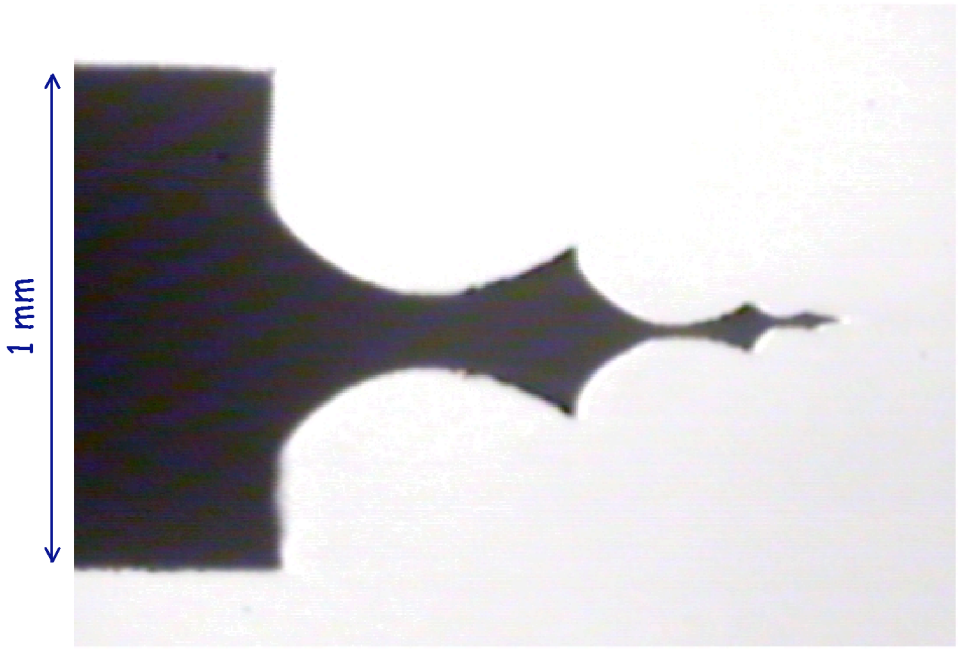
Millifluidics,
3. Capillary rise

Etching a tip...



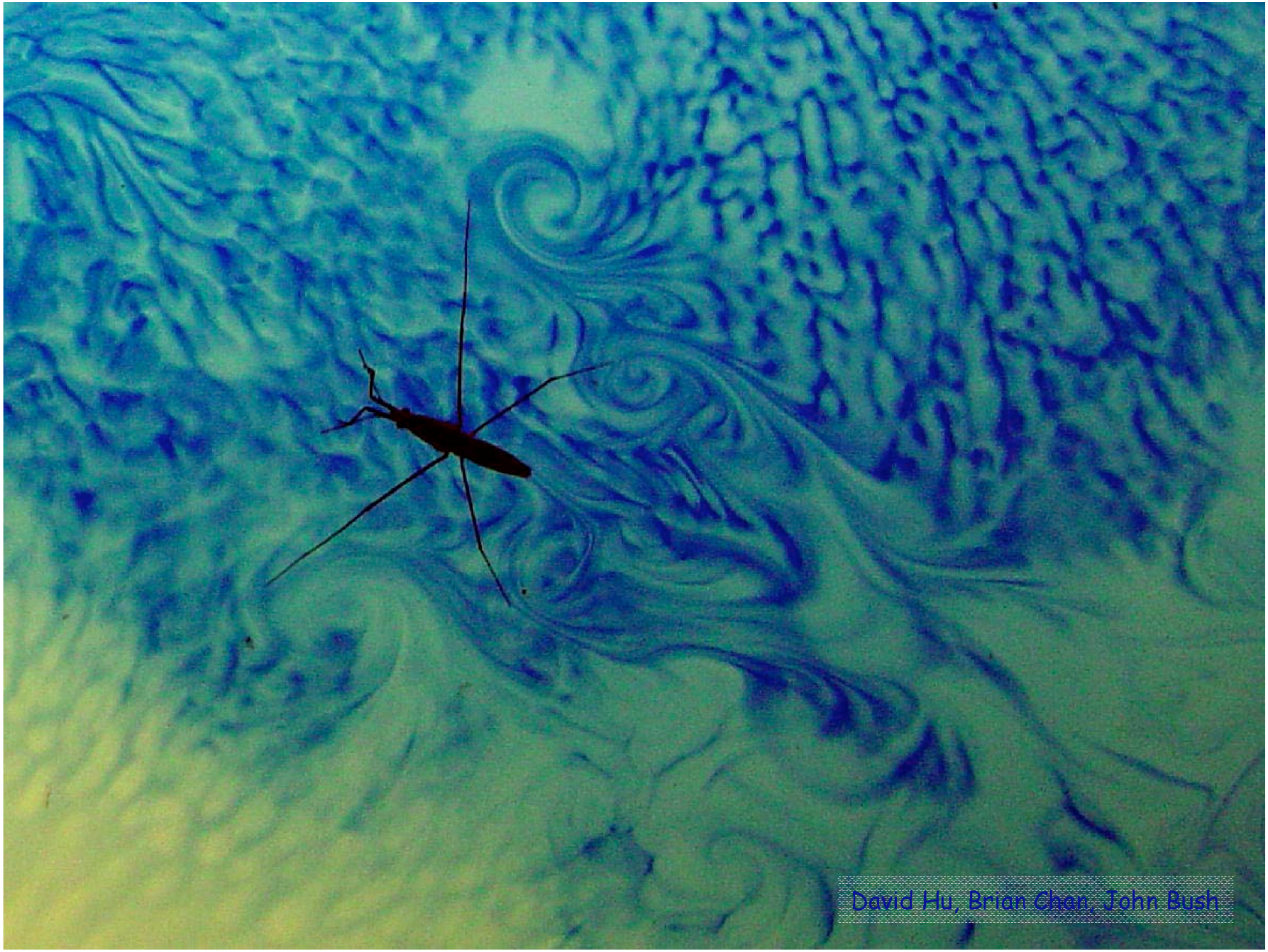


Takahashi

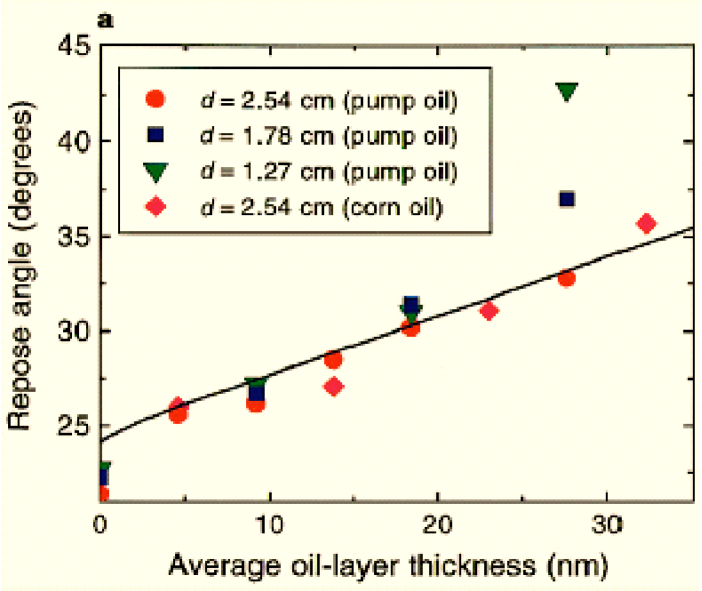

1 mm

Walking on water ?

David Hu, Brian Chan, John Bush


David Hu, Brian Chen, John Bush

What keep sandcastles standing ?



D.J. Hornbaker *et al.*

Which technique ?

- Static methods -

Du Nouy Ring method

The traditional method used to measure surface or interfacial tension. Wetting properties of the surface or interface have little influence on this measuring technique. Maximum pull exerted on the ring by the surface is measured.

Wilhelmy Plate method

A universal method especially suited to check surface tension over long time intervals. A vertical plate of known perimeter is attached to a balance, and the force due to wetting is measured.

Spinning Drop method

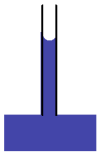
This technique is ideal for measuring low interfacial tensions. The diameter of a drop within a heavy phase is measured while both are rotated.

Pendant Drop method

Surface and interfacial tension can be measured by this technique, even at elevated temperatures and pressures. Geometry of a drop is analyzed optically.

Sessile Drop method

This optical contact angle method is used to estimate wetting properties of a localized region on a solid surface. Angle between the baseline of the drop and the tangent at the drop boundary is measured. Ideal for curved samples or where one side of the sample has different properties than the other.



Capillary rise

Good for small quantities and reasonably accurate

- Dynamic methods -

Bubble Pressure method

A measurement technique for determining surface tension at short surface ages. Maximum pressure of each bubble is measured.

Drop Volume method

A method for determining interfacial tension as a function of interface age. Liquid of one density is pumped into a second liquid of a different density and time between drops produced is measured.

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