#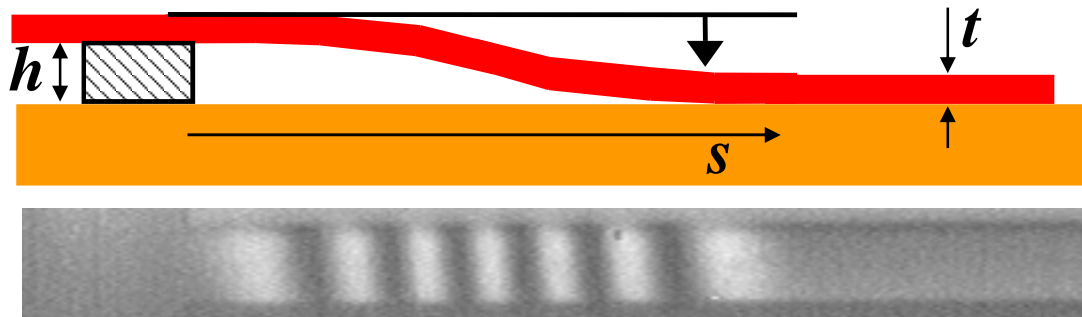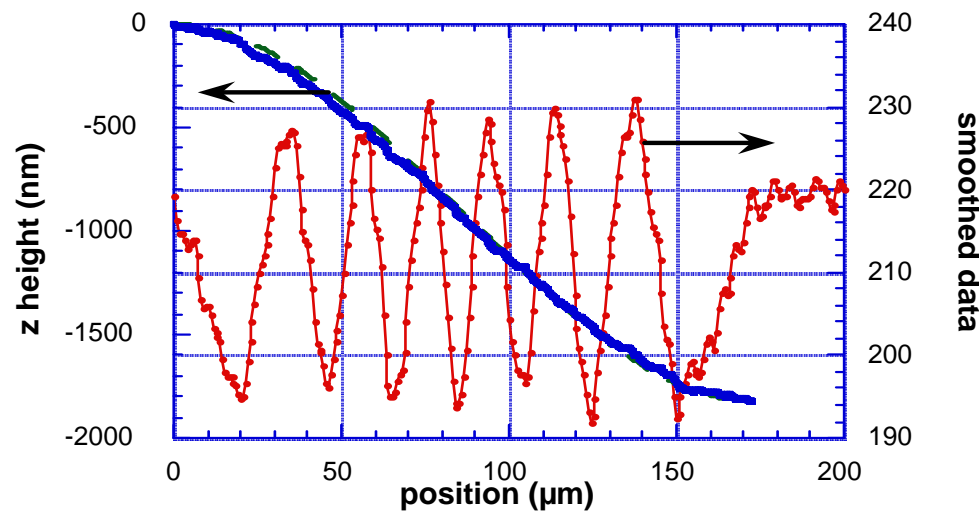 As structures become small, adhesion can dominate over inertial forces. We use μcantilevers to quantify and study adhesion, Γ

Cross-section schematic

Interferogram
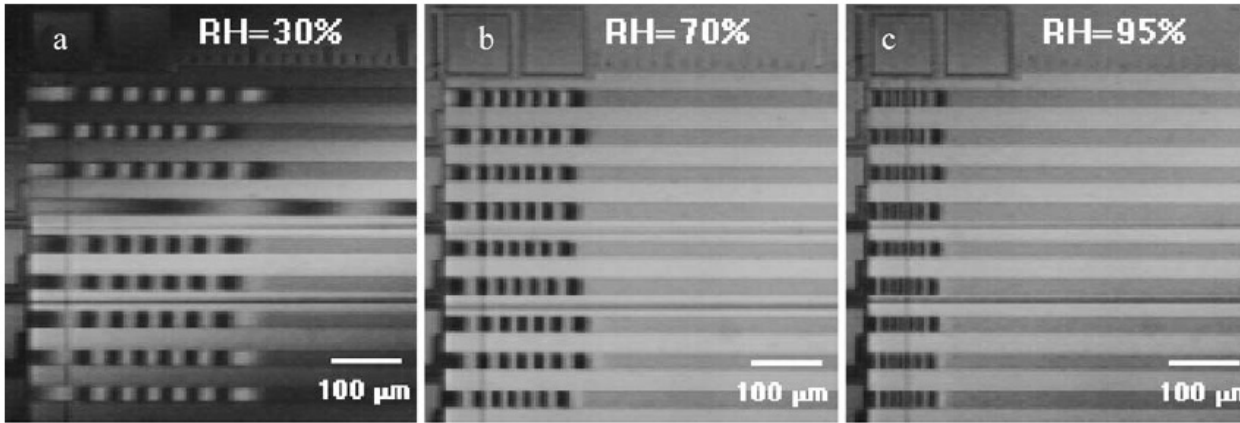
Quantification of deflections

$$G = -\frac{dU_E}{wds} = \frac{3}{2}E\frac{h^2 t^3}{s^4} = \Gamma = 10\,\frac{\text{mJ}}{\text{m}^2}$$
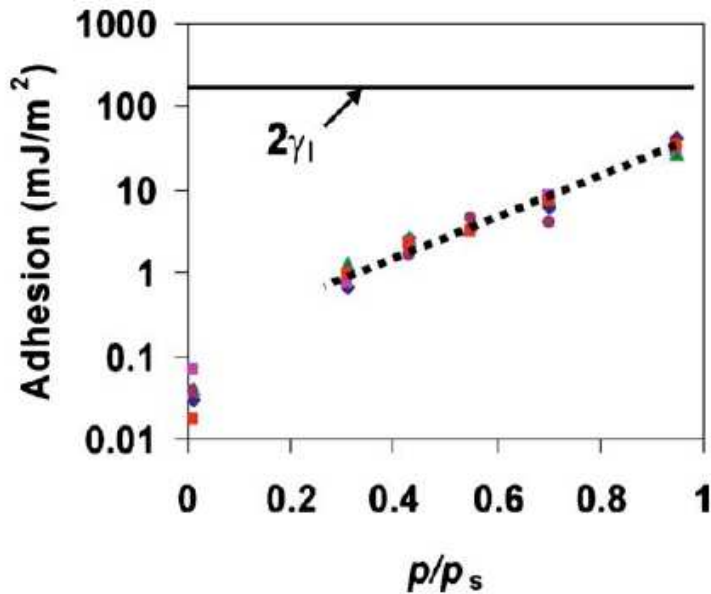
Adhesion determination

(de Boer and Michalske, Journal of Applied Physics, 1999)

slide 1

In this study we measured and modeled the adhesion due to capillary forces as a function of humidity. Just a few nanometers of surface roughness strongly reduces the adhesion.

Cantilevers adhesion increases as relative humidity (p/p_s) increases

Data

Comparison with different surface roughness models

M. P. de Boer, Experimental Mechanics (Feb. 2007)