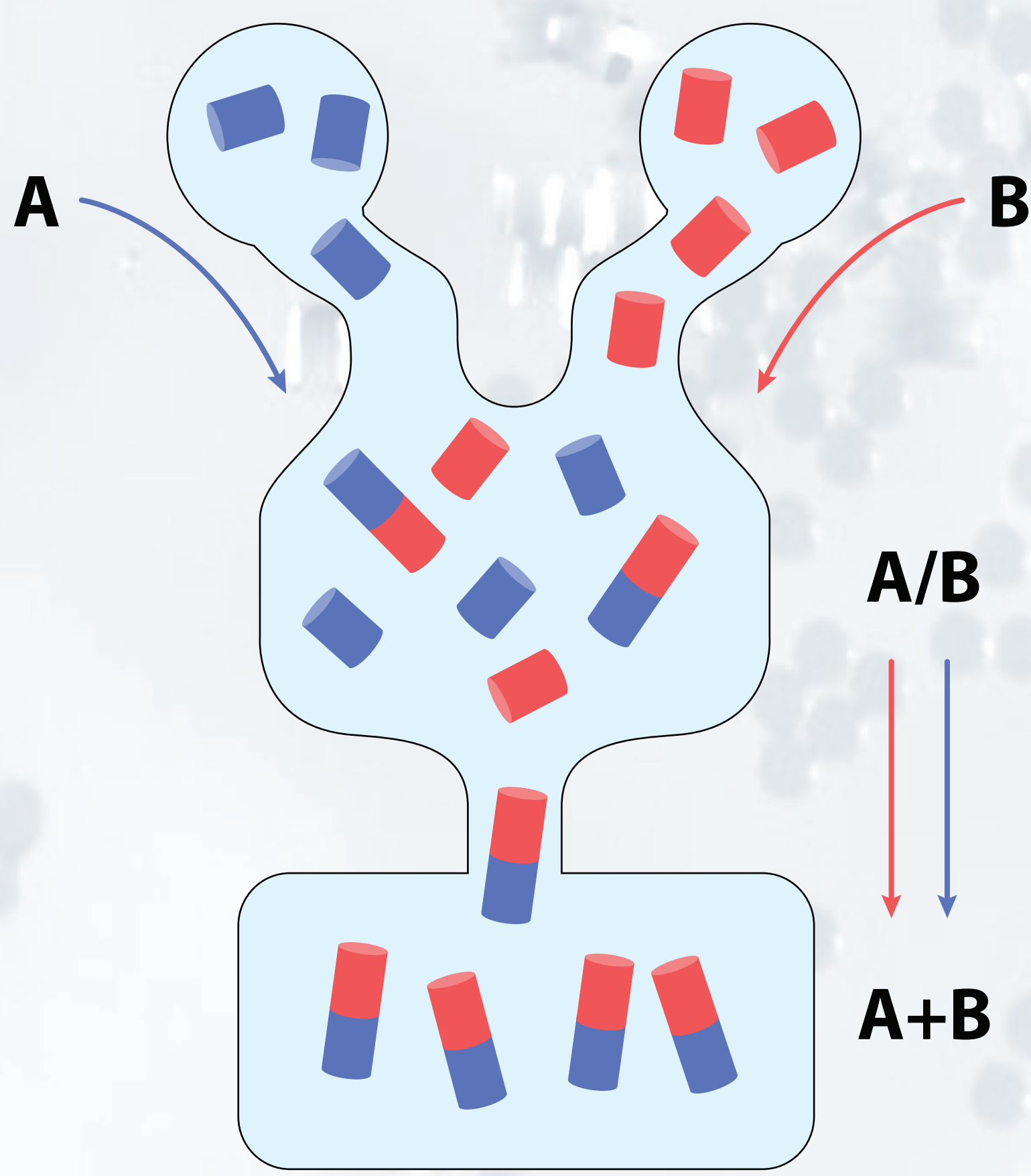
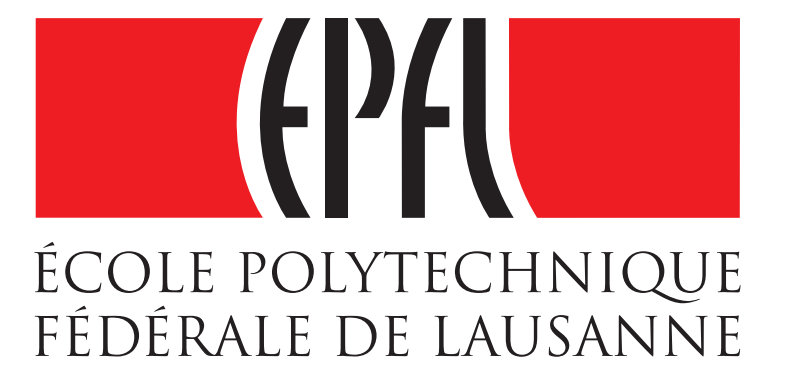


Hydrophobic Forces in Liquid Selfassembly

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Objective

Liquid mediated selfassembly of different functional parts assisted by...

... a microfluidic system

- (i) delivery of parts into
- (ii) reaction chamber and
- (iii) selection

... orthogonal functionalisation

- (i) hydrophilic
- (ii) hydrophobic

hydrophobic

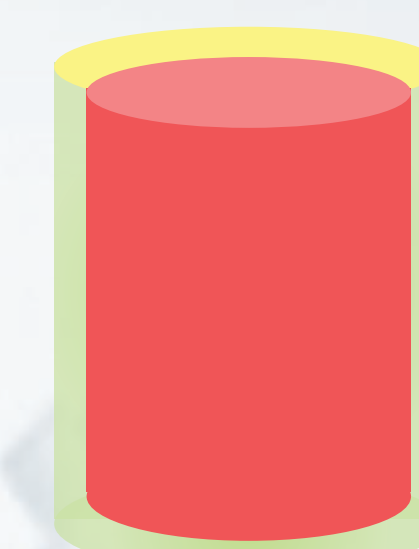
Parts

Part A
function A



hydrophilic

Part B
function B



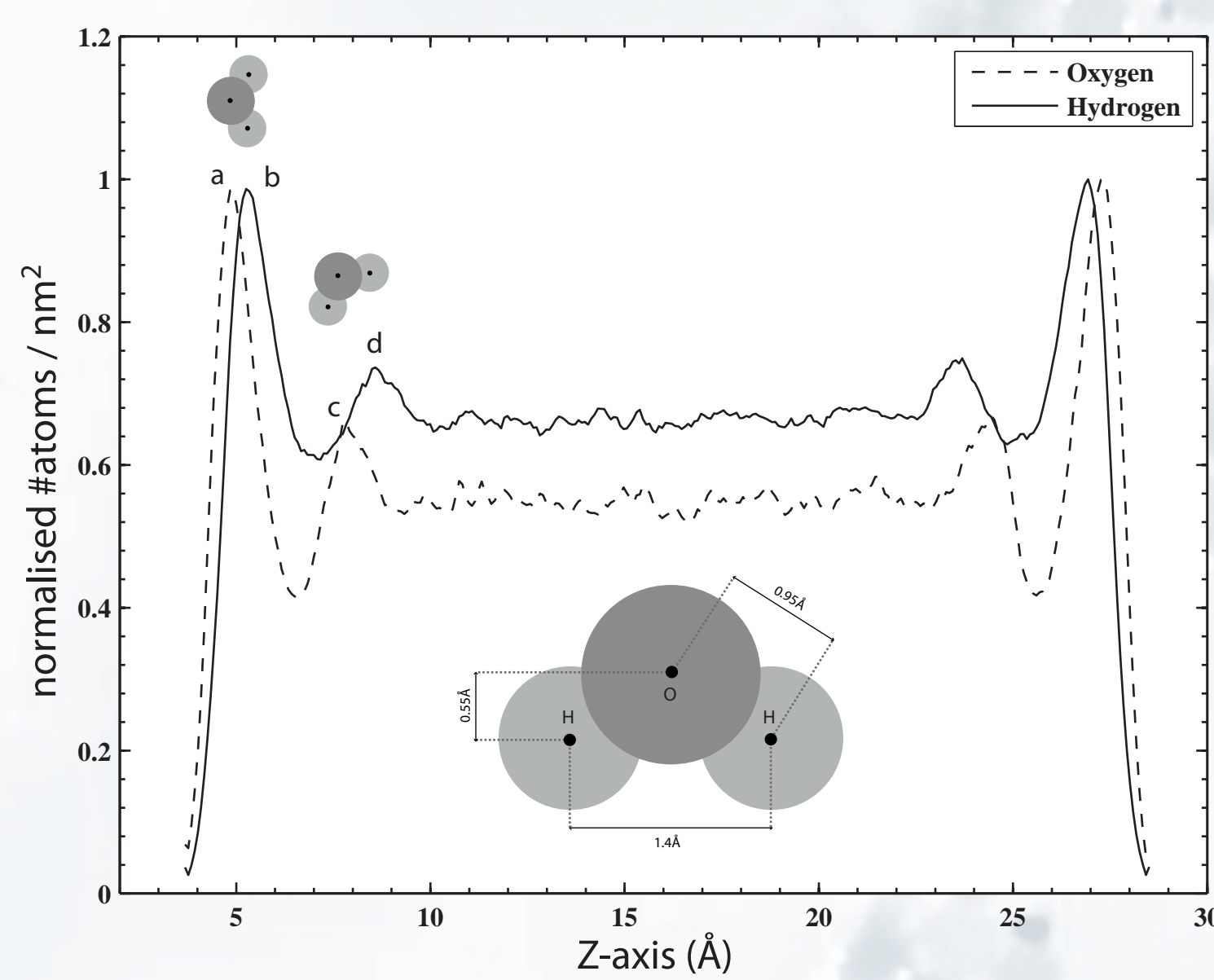
hydrophobic

... have different functions like

- (i) sensor
- (ii) actuator
- (iii) transmitter

... are orthogonally functionalised by

- ... carbon
- ... teflon (C₄F₈)
- ... thiols
- ... plasma O₂ treatment

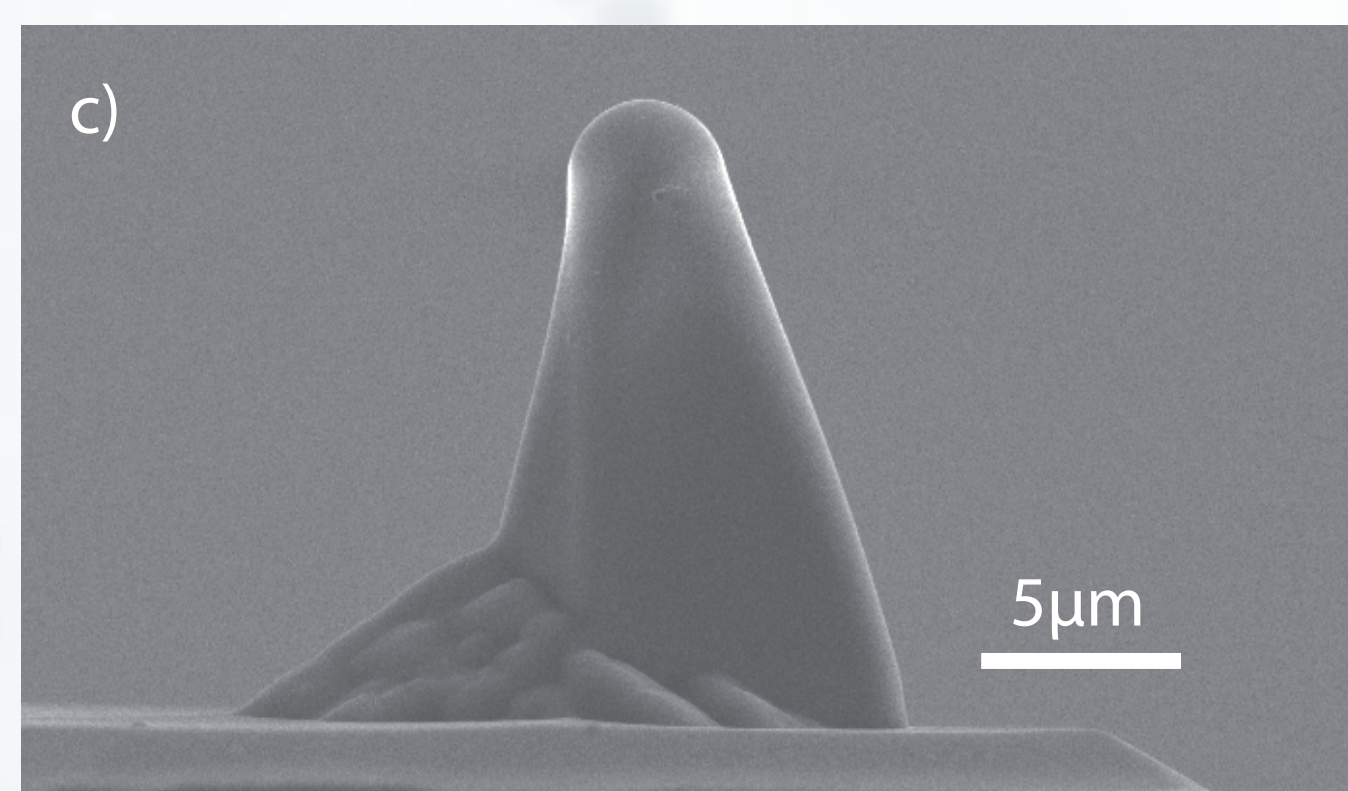
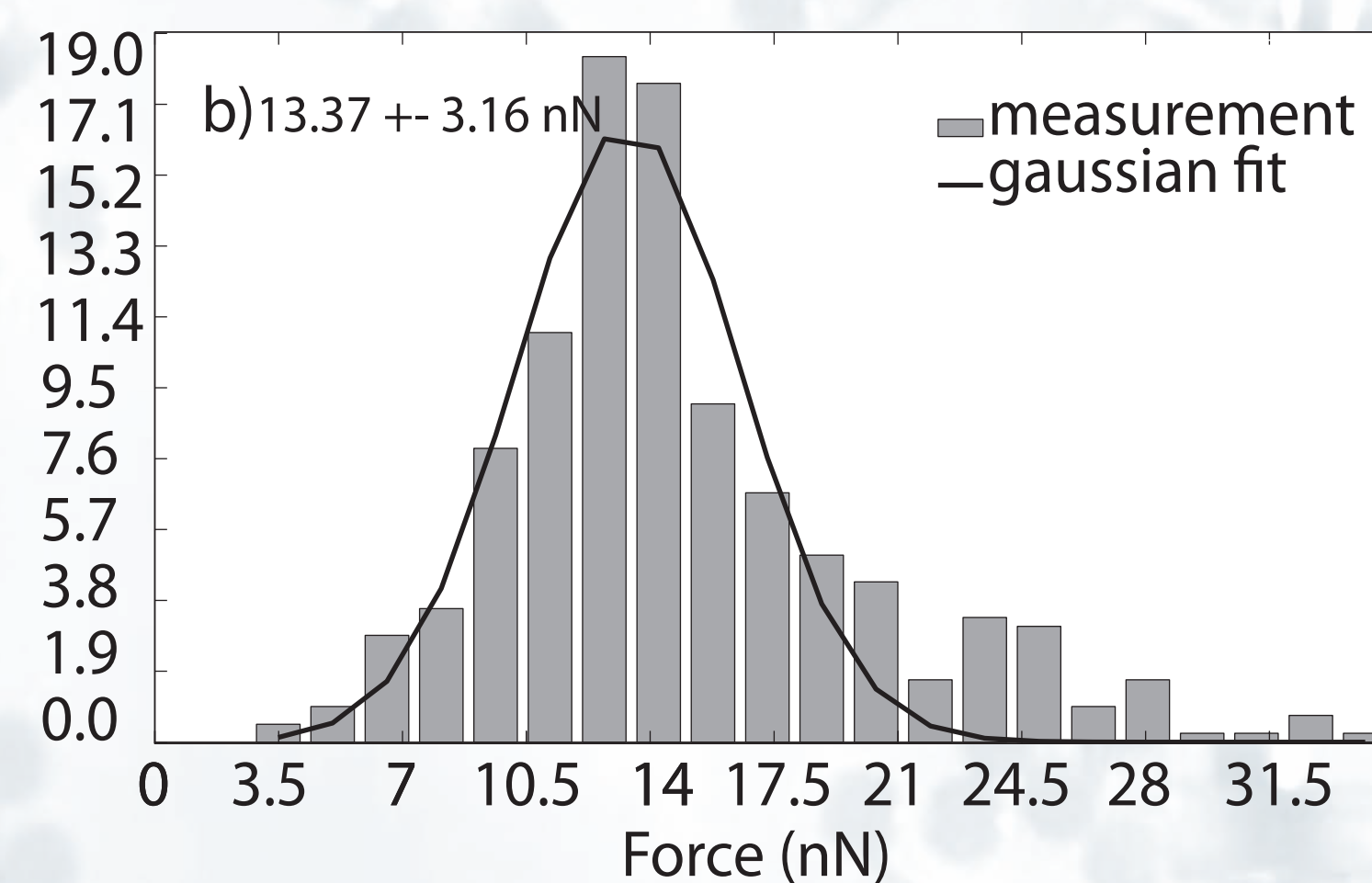
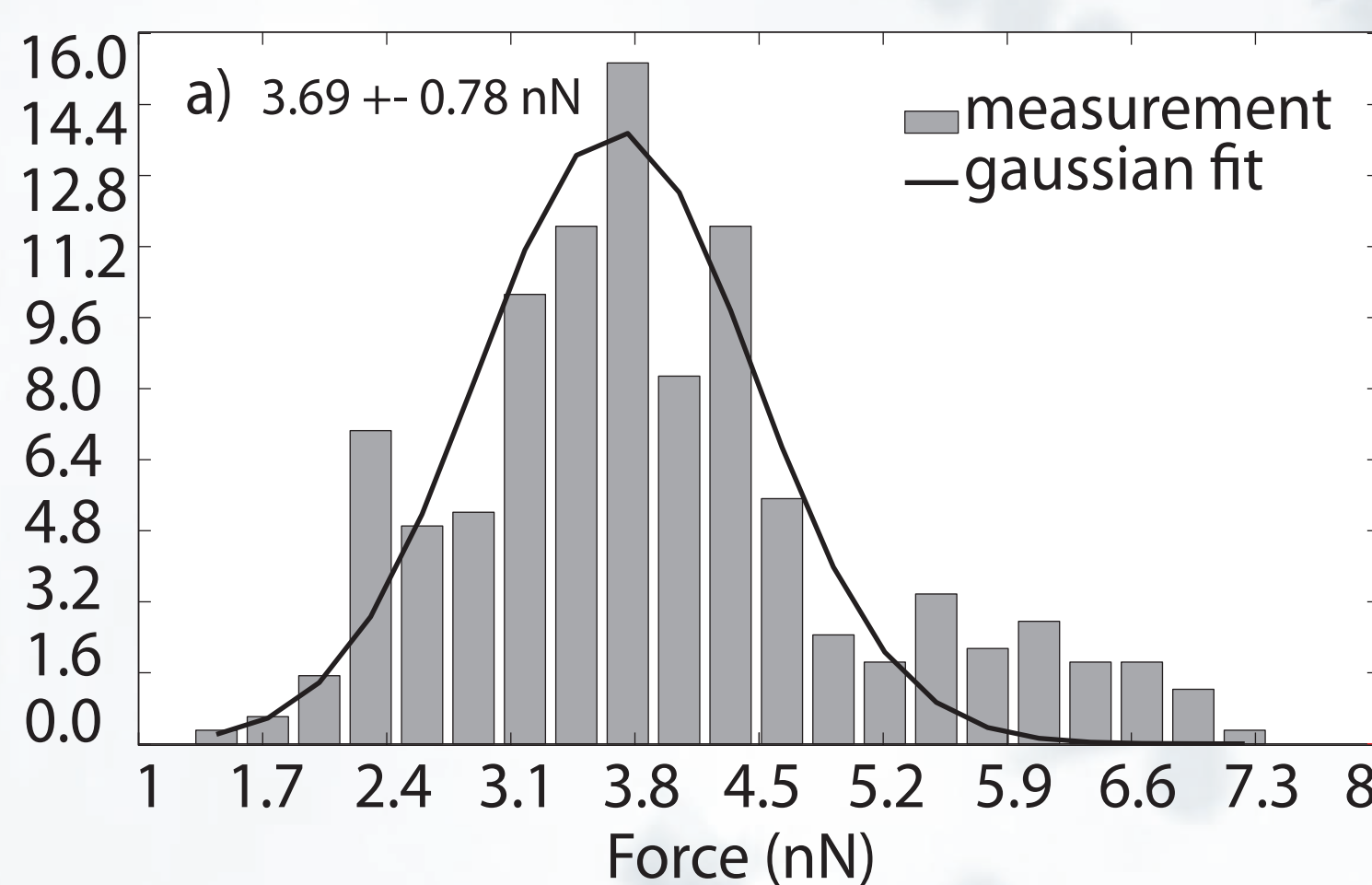


Hydrophobic Interaction

has been investigated by

... molecular dynamic simulations

- (i) molecular layering
- (ii) orientation of molecules
- (iii) interaction length



... force measurement histograms on hydrophobic surfaces by scanning probe microscopy

- (a) teflon-teflon
- (b) carbon-carbon
- (c) SEM of used probe tip

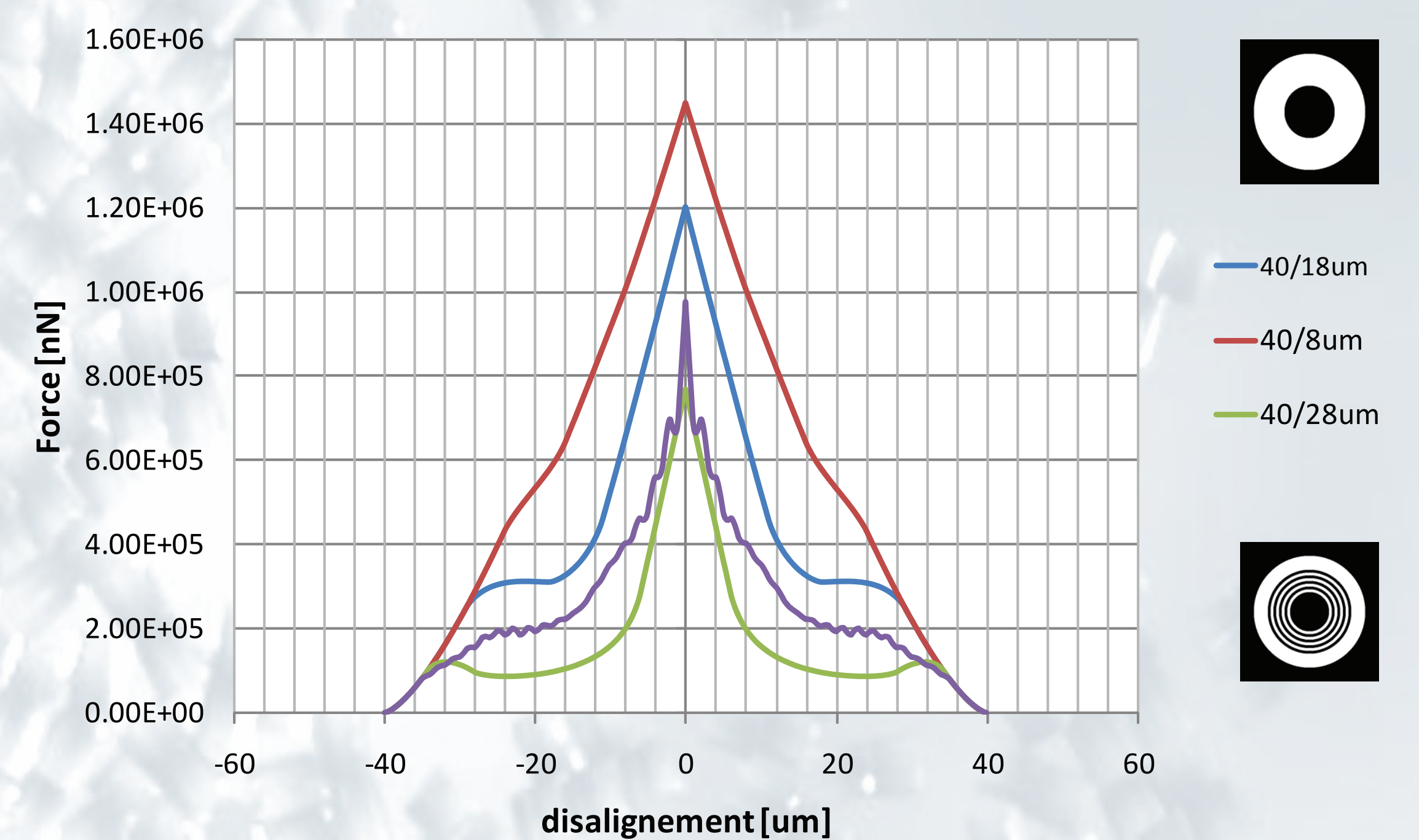
R. M. Gullo, L. Jacot-Descombes, L. Aeschimann and J. Brugger, "Characterization of Hydrophobic Forces for in Liquid Self-Assembly of Micron-Sized Functional Building Blocks", *Materials Research Society Symposium Proceedings*, Boston, Massachusetts, USA, November 30-December 2, 2010..

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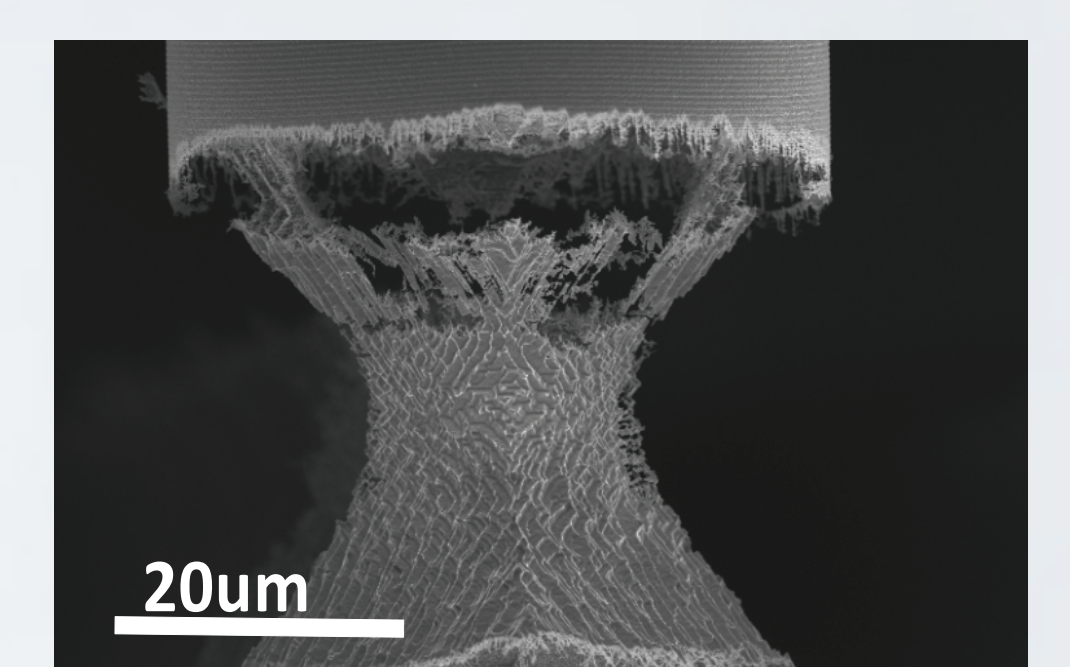
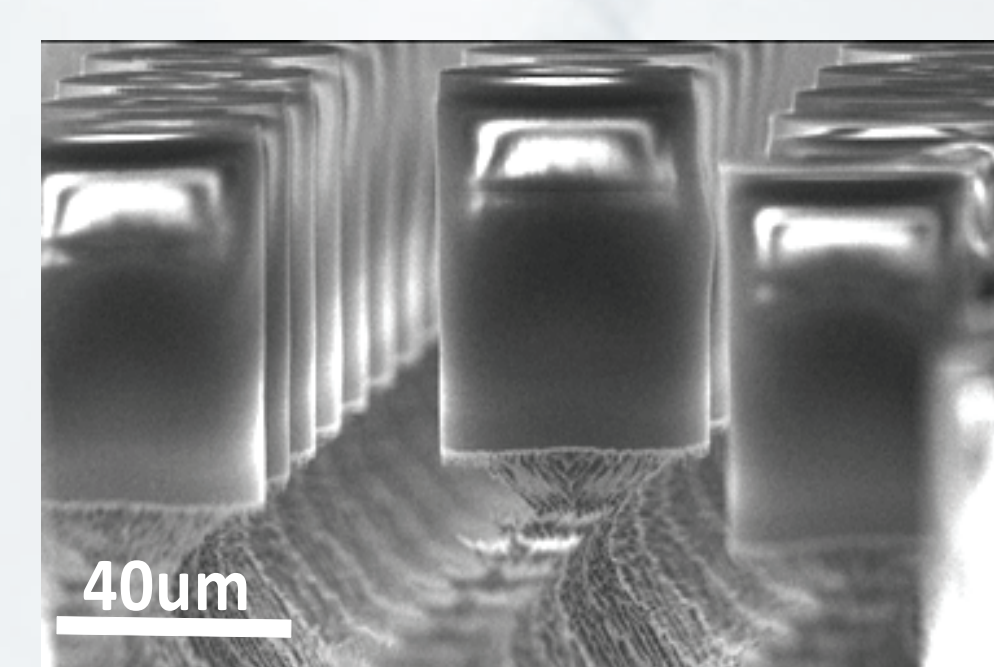
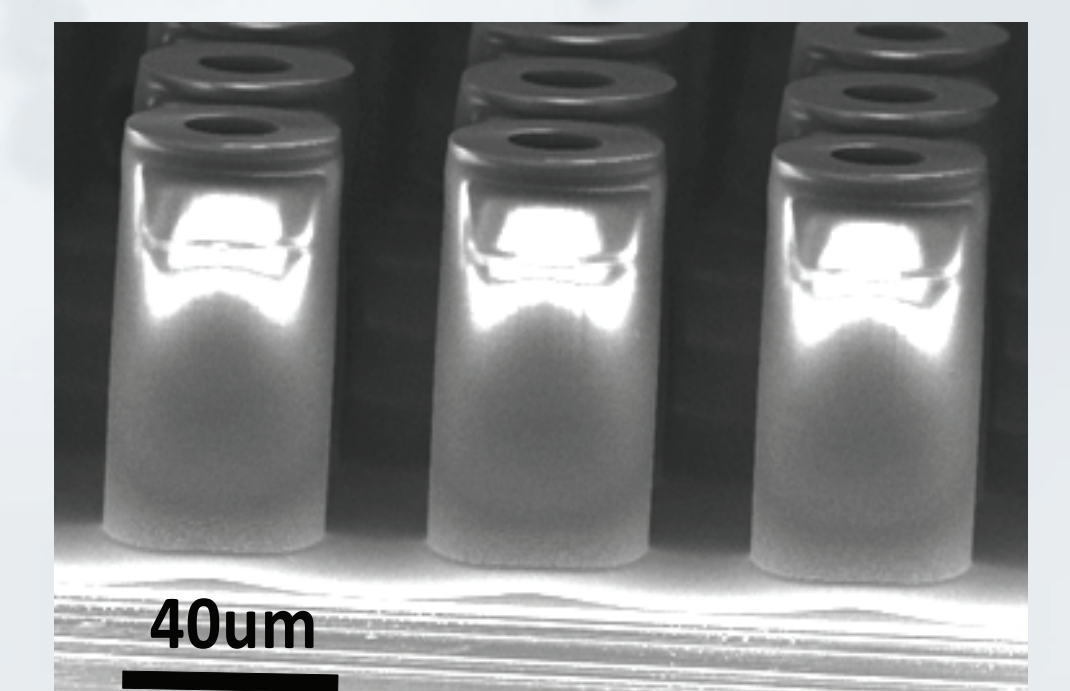
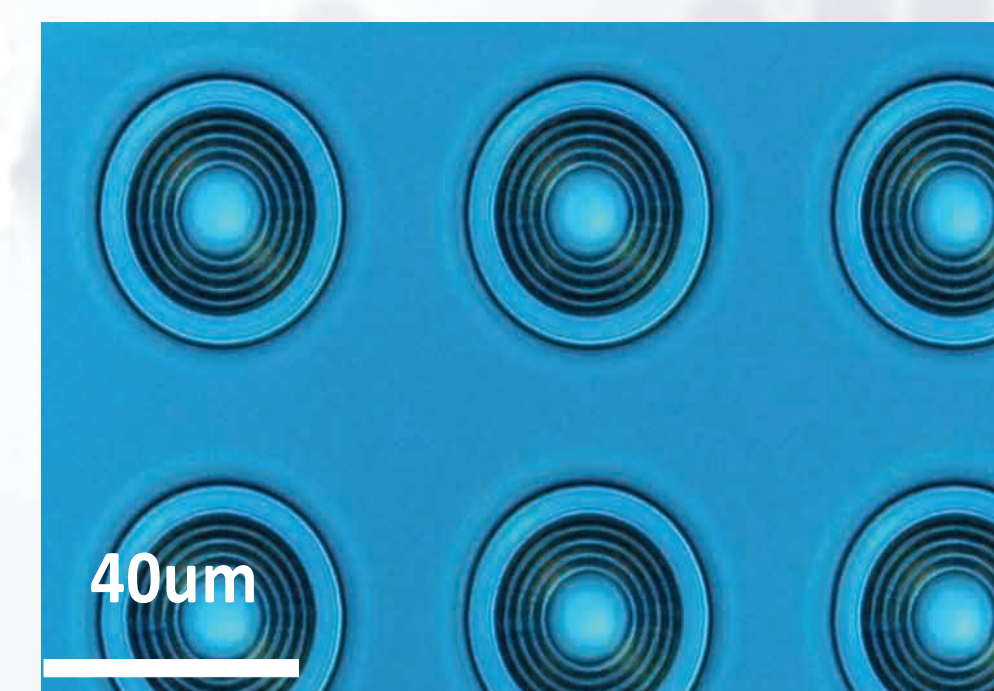
Surface Microstructuring

... allows the precise engineering of spacial binding energy.



Microfabrication of Silicon Parts

- (i) DRIE technology , (ii) Dry pre-release, (iii) Micro-structured rim, (iv) Gold top for functionalisation



Background image

Optical image of in liquid pairwise selfassembled SU8 parts functionalised by local plasma O₂ surface treatment (by L. Jacot-Descombes)