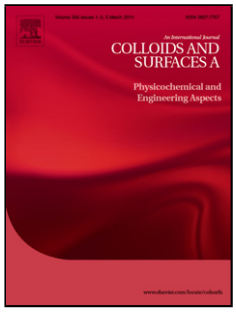
Accepted Manuscript



Title: Hysteresis of Contact Angle of Sessile Droplets on Deformable Substrates: Influence of Disjoining Pressure

Authors: Gulraiz Ahmed, Nektaria Koursari, Igor V. Kuchin, Victor M. Starov

PII: S0927-7757(18)30176-6
DOI: https://doi.org/10.1016/j.colsurfa.2018.03.006
Reference: COLSUA 22331

To appear in: *Colloids and Surfaces A: Physicochem. Eng. Aspects*

Received date: 19-12-2017
Revised date: 1-3-2018
Accepted date: 2-3-2018

Please cite this article as: Ahmed G, Koursari N, Kuchin IV, Starov VM, Hysteresis of Contact Angle of Sessile Droplets on Deformable Substrates: Influence of Disjoining Pressure, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* (2010), https://doi.org/10.1016/j.colsurfa.2018.03.006

Hysteresis of Contact Angle of Sessile Droplets on Deformable Substrates: Influence of Disjoining Pressure

Gulraiz Ahmed [a,c], Nektaria Koursari [a], Igor V. Kuchin [b], Victor M. Starov [a*]

[a] Department of Chemical Engineering, Loughborough University, Loughborough, Leicestershire LE11 3TU, United Kingdom

[b] Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Leninsky pr, 31/4, Moscow 119071, Russia

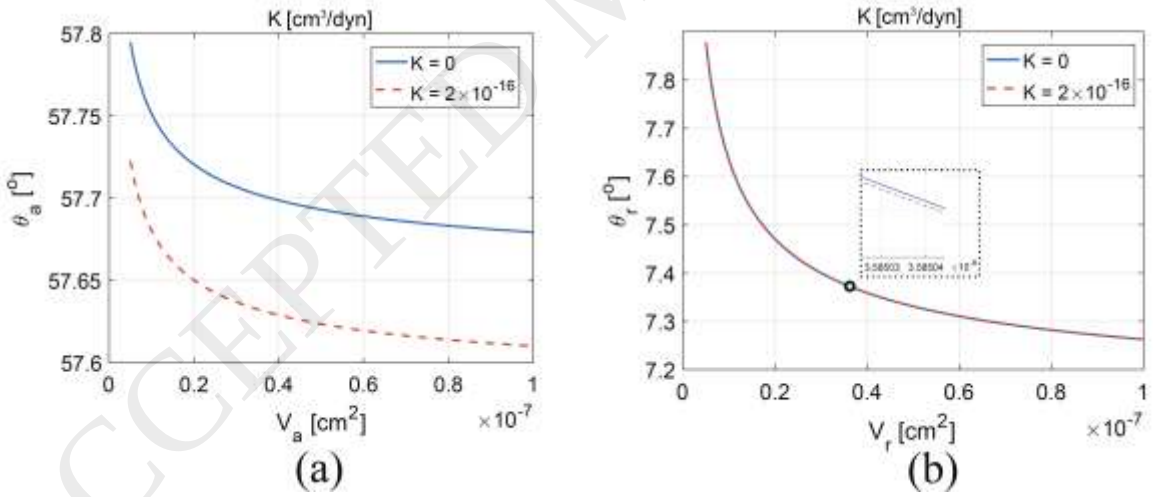
[c] Department of Mechanical Engineering, University of Central Punjab, Lahore, Pakistan.

* Corresponding author

Email address: Victor M. Starov v.m.starov@lboro.ac.uk.

Graphical Abstract:

Variation of advancing (a) and receding (b) contact angles with volume of droplet for non-deformable (i.e. $K = 0$ cm^3/dyn) and deformable (i.e. $K = 2 \times 10^{-16}$ cm^3/dyn) substrates.



Abstract

Liquid droplet placed on a deformable / soft substrate causes the substrate to deform. Combined action of capillary pressure and surface forces, which act in the vicinity of the apparent three-phase contact line and substrate's elasticity determine both the liquid shape and the substrate