Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Evaporation of sessile droplets on smooth and structured substrates[1] PIERRE COLINET, MARIE FLANDROY, SAM DEHAECK, ALEXEY REDNIKOV, BENJAMIN SOBAC, YANNIS TSOUMPAS, Universite Libre de Bruxelles — Evaporation of sessile droplets remains a topic of active research nowadays, not only due to its widespread occurrence both in nature and technology, but also because it raises a number of interesting fundamental questions. Among these, the influence of the substrate topography is far from being understood. In this presentation, we focus on the difference between droplet evaporation dynamics on a smooth substrate and on substrates with controlled geometrical heterogeneities (square or hexagonal arrays of cylindrical pillars). While the wetting dynamics of droplets on such structured substrates has already been studied (in particular it is known that the droplet shape typically tends to adopt the symmetry of the pattern it lies upon), the influence the structure has on the evaporation dynamics (including the influence of pinning) has not yet received much attention. From interferometric measurements of droplet shapes, we highlight in particular that the evaporation from structured substrates is generally faster than on smooth substrates, and that the scaling exponents characterizing the evolution of radius versus time are also different. Pinning is also shown to be favored above a certain surface fraction of pillars, both for hexagonal and square arrays.

[1]Financial support of FRS-FNRS, ESA-BELSPO PRODEX, ULB, and BELSPO IAP 7/38 is gratefully acknowledged.

Pierre Colinet
Universite Libre de Bruxelles

Date submitted: 31 Jul 2015 Electronic form version 1.4