Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Desiccation of a pool of blood: from fluid mechanics to forensic investigations[1] CELINE NICLOUX, Institut de Recherche Criminel de la Gendarmerie Nationale (IRCGN), DAVID BRUTIN, Aix-Marseille University — The evaporation of biological fluids (with droplet configuration) has been studied since a few years due to several applications in medical fields such as medical tests, drug screening, biostabilization... The evaporation of a drop of whole blood leads to the formation of final typical pattern of cracks [1]. Flow motion, adhesion, gelation and fracturation all occur during the evaporation of this complex matter. During the drying, a sol-gel transition develops. The evaporation of a pool of blood is studied in order to link the pattern formation and the evaporation dynamics. We intend to transfer the knowledge acquired for drops on pool to improve the forensic investigations. In this study, we focus on both pool of blood and pure water to determine the transition region from drop to pool and then to characterize the evaporation rate in the pool configuration. The spreading of blood which can be seen as a complex fluid is strongly influenced the substrate nature. The initial contact angle of blood on different substrate nature [2] will influence the maximum thickness of the layer and then will influence the evaporation mass flux.

[1] B. Sobac & D. Brutin, Phys. Rev. E 84, 011603, 2011.
[2] Brutin D., Sobac B., Nicloux C., Journal of Heat Transfer, Vol. 134, 061101, 2012.

[1]The authors gratefully acknowledge the help and the fruitful discussions raised with A. Boccoz.

David Brutin
Aix-Marseille University

Date submitted: 31 Jul 2012 Electronic form version 1.4