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WETTING AND EVAPORATION OF PURE FLUIDS DROPLETS

**Abstract**

Sessile drop evaporation is widely studied considering the huge number of applications in industry and research (CNTs growth, gold nano-particles mono-layer formation). The evaporation of a drop posed onto a substrate is still not completely understood due to the complexity of the problem and the thermal coupling with the substrate, the environment and the behaviour of the triple line (receding or pinned triple line). We investigate the sessile drop evaporation problem by the mean of visible and infrared visualization but also heat flux measurements. Using synchronized acquisition devices, we provide a deep analysis of the heat transfer from the substrate to the drop and evidence the driving parameters. The substrate wettability using nano-coated deposits influence the sessile drop evaporation through the triple line behaviour of pure fluids (like ethanol). The problem of sessile drop evaporation have also a wide range of application in biology. we use also microgravity tools (parabolic flights and space experiments) to decompose the mechanisms involved during the evaporation: both the internal flow motion and the triple line dynamics are affected by the change of gravity. During the presentation, we will evidence these changes. These experiments are performed in the frame of IMPACHT a future space French-chinese experiment on-board a Chinese scientific satellite SJ-10.