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Numerical Study of the Effect Surface Properties in Boiling

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Abstract **-** High heat loads are common to most industries, such as microprocessors, power generators, thermal management and transportation. One solution for this problem is the use of systems combining evaporator, condenser and electrowetting heat pipes. Conventional evaporators can limit the operation of the system if they are limited by heat conduction in a film near the wall surface. To improve the system modification on the surface wetting have been proposed, through change in the surface properties (contact angle) or through electrowetting. In this work, a numerical simulation of boiling in different wetting conditions is presented. The two-phase flow is described by the VOF method. Integrated heat transport of both phases is solved. The evolution of bubble shape and the temperature field during bubble formation are analysed.

Keywords**:** Boiling; Volume of Fluid; OpenFOAM; Contact angle; Nanofluids.