

## Gravity- and Shear-Driven Thin Films Flow on Heated Hicrostructured Walls

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Evaporation of thin falling films and shear-driven films is widely used for cooling of electronic devices and other components, for powders production in chemical and food industry and for other technological processes. Using microstructured wall surfaces may improve the performance of the evaporator and prevent film dryout. We develop a model which describes the hydrodynamics and heat transfer of the gravity- and shear-driven liquid films on microstructured surfaces. We investigate the hydrodynamic stability of the film flow using the long-wave theory. It is shown that the longitudinal grooves stabilize the film flow both when the wall is completely or only partially covered by the film. The influence of the Marangoni effect on the film shape and velocity field has been analyzed in the framework of the long-wave theory and using the volume of fluid method.

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