

Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

On the influence of thermal effects on the dynamics of thin films and filaments¹ LOU KONDIC, IVANA SERIC, SHAHRIAR AFKHAMI, New Jersey Institute of Technology — We report our recent progress on formulating fully self-consistent simulations the dynamics of thin films and filaments exposed to an external heat source on thermally conductive substrate. The simulations are based on the Volume of Fluid, and include novel components such as inclusion of Marangoni , as well as of van der Waals forces. Furthermore, the simulations couple dynamics directly with the spatio-temporal evolution of temperature field boththe fluid and in the substrate. The particular physical setup considered involvesfilms and geometries exposed to laser heating on silicon/silicon dioxide , with the focus on understanding the influence of variation of material (surface tension and viscosity) with temperature. We will discussrole that Marangoni effect has on the development of film instability, and willconsider the influence of variation of normal interfacial stresses due toevolution of the fluid temperature.

¹Supported by NSF Grant No. CBET-1604351

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Date submitted: 26 Jul 2017

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