Abstract Submitted
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Thermocapillarity driven Instabilities in thin liquid layers subject to long-wave analysis ANEET NARENDRANATH, Michigan Technological University, JAMES HERMANSON, University of Washington, Seattle, ALLAN STRUTHERS, ROBERT KOLKKA, JEFFREY ALLEN, Michigan Technological University — An evolution equation describing the dynamics of an evaporating liquid film has previously been developed from the governing equations of fluid dynamics after the application of the lubrication approximation and the choice of a viscous time scale. The authors have solved the evaporating liquid film evolution equation with a validated numeric program. The role of domain size and thermocapillarity on the formation of secondary finger like structures is studied. The effect that gravity has on the formation of these finger patterns is evaluated. It is observed that the formation of secondary structures is strongly tied to a balance between destabilizing thermocapillarity and stabilizing surface tension. The secondary structures are amplified in a zero gravity environment.

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