

Abstract Submitted  
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**Effect of Substrate Wetting on the Morphology and Dynamics of Phase Separating Multi-Component Mixture** ABHEETI GOYAL, FEDERICO TOSCHI, PAUL VAN DER SCHOOT, TU Eindhoven — We study the morphological evolution and dynamics of phase separation of multi-component mixture in thin film constrained by a substrate. Specifically, we have explored the surface-directed spinodal decomposition of multicomponent mixture numerically by Free Energy Lattice Boltzmann (LB) simulations. The distinguishing feature of this model over the Shan-Chen (SC) model is that we have explicit and independent control over the free energy functional and EoS of the system. This vastly expands the ambit of physical systems that can be realistically simulated by LB simulations. We investigate the effect of composition, film thickness and substrate wetting on the phase morphology and the mechanism of growth in the vicinity of the substrate. The phase morphology and averaged size in the vicinity of the substrate fluctuate greatly due to the wetting of the substrate in both the parallel and perpendicular directions. Additionally, we also describe how the model presented here can be extended to include an arbitrary number of fluid components.

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