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Directed Percolation in Demixing Blends on Wetting Substrate ABHEETI GOYAL, Fluids and Flows Group, and Theory of Polymer and Soft Matter Group, Eindhoven University of Technology, PAUL VAN DER SCHOOT, Theory of Polymer and Soft Matter Group, Eindhoven University of Technology, FEDERICO TOSCHI, Fluids and Flows Group, Eindhoven University of Technology, THEORY OF PHYSICS AND SOFT MATTER GROUP TEAM, FLUIDS AND FLOWS GROUP TEAM — Demixing, also called phase separation, is a challenging scientific problem with many important applications. When liquid-liquid mixtures demix in contact with a surface, often, one of the liquids accumulates next to the surface which drastically alters the resulting morphologies. The dynamical evolution of these demixing morphologies is crucial for the performance, amongst others, of many optoelectronic and photovoltaic devices because their functioning relies on a well-defined morphology that must have (i) a minimum local concentration in each phase, and (ii) connectivity to the substrate in order to transport positive and negative charges to the corresponding electrodes. We investigate demixing in binary mixtures on a wetting substrate from the perspective of directed and connectivity percolation. Our results provide an improved understanding of the onset and growth of percolation, that may assist to tailor-make morphologies as per application.

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