Abstract Submitted
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Fluorescent excitation transfer as a tool for the phase transition studies ALEXEI GOUN, Postdoctoral researcher — The use of the fluorescent resonant excitation transfer technique (FRET) to study the phase transition kinetics is demonstrated. The laser temperature jump is applied to the water/2,6-lutidine mixture and causes the demixing. Coumarin 480 and hydroxypyrene laser dyes form excitation transfer that interrogates the spatial structure of the system. Due to the differential solubility of these dyes in the components of the mixture, the excitation transfer ceases once the phase separation occurs. The spatial resolution of the method is determined by the Forster distance of the excitation transfer pair, and in this case is equal to 3 nm. The phase separation is completed within 1 microsecond. The rising edge of the fluorescence is consistent with polynomial growth of the phase separated domains, and not with Cahn-Hilliard fixed length instability. The theoretical model for the excitation transfer in a variety of systems such as separation of binary mixture, phase reorganization of membranes, formation of lamellar structure is developed.

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