

THEORETICAL MODELS OF THE EXCITATION TRANSFER IN PHASE SEPARATING LIQUIDS

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The use of the fluorescent resonant excitation transfer (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 of the mixture components. Coumarin 480 and hydroxypyrene laser dyes form excitation transfer pair once they are in the uniform phase of the mixture. Due to the differential solubility of these dyes in the components of the mixture, the excitation transfer ceases once the phase separation occurs. The increase of the donor fluorescence indicates the extent of the phase separation. 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 dynamics of the excitation transfer between dye molecules is analyzed for Cahn-Hilliard and nucleation-growth models of phase separation.