

THERMAL DIFFUSIVITY,
DIFFUSION, AND THERMODIFFUSION
OF A SPATIALLY CONFINED BINARY
LIQUID MIXTURE IN ITS CRITICAL REGION

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S u m m a r y

The features of the thermodiffusion phenomena in binary liquid mixtures spatially confined within small volumes of the cylindrical geometry have been studied near their liquid–vapor critical point. From this point of view, the formulae for the coefficients of thermal diffusivity and diffusion and the thermodiffusion relation which determine the width of the central component of the Rayleigh line have been obtained and analyzed. It has been shown that the thermodiffusion contribution to the generalized diffusion coefficient grows when removing from the critical point of a spatially confined binary mixture, contrary to the direct diffusion contribution behavior. The calculations proved that the value of the thermal diffusivity of a spatially confined system can considerably exceed the relevant value in a large volume. Naturally, the difference between the values of the thermal diffusivity in small and large volumes decreases with increase in the characteristic size of the system.