

Investigation of thermodynamics of evaporation of multi-component microdroplets – distillation at microscale

Supervisor: dr hab. inż. Daniel Jakubczyk, e-mail: jakub@ifpan.edu.pl

Evaporation at micro- and nanoscale calls for a modern description language. Investigation of distillation of liquid mixtures in microdroplets opens such perspectives, giving an interesting opportunity of probing the microworld by analysing the mutual interaction of evaporating components. Remote, accurate investigations of (sub)microdroplets are possible by levitating them in electrodynamic traps and utilising optical characterisation methods (scattering, spectroscopy). Group of Optical Characterisation of Micro- and Nanoobjects of IPPAS has an expertise in these methods.

The research task would consist of measurements versus thermodynamic parameters and droplet composition, in particular including azeotropic mixtures, and the development of description accounting for the granularity of matter and the structure of the gas-liquid interface.