Project 4.4. Investigation of thermodynamics of evaporation of multi-component microdroplets – distillation at microscale

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Institute: IPPAS

Unit: ON2.7 - Group of Optical Characterisation of Micro- and Nanoobjects

www: http://info.ifpan.edu.pl/sdvs/en/on2.7.html

Background:
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.

Aim:
The research task would consist of measurements versus thermodynamic parameters and droplet composition, in particular including azeotropic mixtures (whose proportions cannot be changed by simple distillation), and the development of description accounting for the granularity of matter and the structure of the gas-liquid interface.

Requirements:
- Master's degree in physics or related field.
- Skills in experimental physics (best but not obligatory – in the field of optics, electrodynamics, thermodynamics or related), ideally – proven by publications.
- Ability to work in a team.
- Good spoken and written English.