The principles of obtaining of micro- and nanocapsules based on Pickering emulsions

S. Aidarova[1*], A. Tleuova[1], A. Sharipova[1], T. Kairaliyeva[1,3],
D. Grigoriev[2], M. Schenderlein[3], R. Miller[3]

[1]*Kazakh National Research Technical University named after K.I. Satpayev, 050013 Almaty, Kazakhstan*
[2]*Fraunhofer Institute for Applied Polymer Rersearch IAP, 14476 Potsdam-Golm, Germany*
[3]*Max-Planck Institute of Colloids and Interfaces, 14476 Potsdam-Golm, Germany*

**zvezda.s.a@gmail.com*

One of the leading trends in contemporary materials science is the development of ergonomic, economical and environmentally friendly new nano-dispersed materials used in its structure or functionality the principles of biomimetics. One of the most rapidly developing at present time examples of such materials are "autonomic" functional materials having the property of self-healing. Such materials include polymers of self-healing, self-defending functional coatings (anticorrosive, antimicrobial) etc. Expanding the range of functionality of such materials is not only of great scientific interest in the field of materials science, but also opens up broad prospects for the economic implementation of new materials and products from them in the national economy of the Republic of Kazakhstan that will ensure not only improve economic efficiency, but also reduce the ecological load to environment.

Therefore, there is need to develop science-based approach to the preparation of such materials, which are nanomaterials often containing nanodispersed particles. Therefore, it implies a comprehensive and systematic study of physical and chemical properties as constituents, and emulsions, their colloid-chemical properties in the volume and in various interfaces. Thus, the study of the peculiarities of the formation of interfacial adsorption layers composed of surfactant and nanoparticles, the use of Pickering emulsions is a promising way to design and predict the properties of submicron and nanocontainers containing active ingredients with practically important functional properties, as well as the relevant task of interdisciplinary science of nanomaterials and nanotechnologies.