Our aim is to investigate, on the basis of carefully planned and systematic fundamental studies, the influence of blends of new amino-acid-based biodegradable surfactants and the most current and popular flotation reagents (mostly frothers – surfactants, for example methyl isobutyl carbinol, polyglycols, n-hexadecyl-trimethyl ammonium bromide, having different molecular weight and structure, hence different diffusion coefficients and adsorption kinetics) on stability of wetting film formed under dynamic conditions at various mineral surfaces (such as quartz, mica, fluorite, feldspar). Stability of the wetting films and kinetics of its drainage are the parameters of decisive role in timescale of so-called three-phase contact (gas-solid-liquid) formation, the necessary step in bubble-mineral particle aggregate formation. This is the fundamental act of flotation process, a very important separation technique used worldwide at the enormous scale in the mineral processing industry. Addition of reagents (surfactants mostly) is essential for flotation recovery enhancement. Nowadays, blending surfactants are common in flotation practice arguably enhancing performance by permitting independent control of the two reagent functions. Mixtures of various flotation reagents can often show a synergetic effect, i.e. (in contrast to the antagonistic effect) their overall effectiveness is greater than expected from their individual performance. This synergetic effect is seen not only in the overall flotation recovery but also in the selectivity of the flotation process and can be seen in the case of collectors and frothers blends as well as mixtures of frothers only. The use of reagents mixtures can have a beneficial effect in selective targeting of different valuable minerals that are present in the ore. The scientific tasks planned to be carried out are aimed to obtain new results with potential application in flotation separation process. Thanks to unique experimental technique, developed in our laboratory (precise pressure controlling device and bubble trap), it will be possible to control the single bubble formation as well as adsorption coverage of both surfactants' mixture components at the surface of bubble colliding with solid substrates under various hydrodynamic conditions, existing in three different experimental set-ups (modified or build within the project framework). Moreover, the experimental studies will be supplemented by computational techniques, allowing determination of nature of molecular interactions between constituents of the mixed adsorption layers and influence of physicochemical parameters on direction and trends of interactions changes. Thanks to such complementary approach, mechanism of synergetic and antagonistic influence of mixed surfactant solutions of various concentrations on wetting film stability will be carefully and systematically examined. Our studies should give opportunity to develop an algorithms and recipes and/or guidelines related to reagents mixing, aimed to obtain effective reagents blends, enhancing wetting film rupture and bubble/solid surface attachment. We believe that the results obtained within the project framework will be of interest of quite broad scientific audience, due to acute lack of similar systematic and comprehensive studies aimed to describe the mechanism of wetting film stability in mixed surfactant solutions under various hydrodynamic conditions.