polydisperse suspensions (3 g/dl). Flocculation process parameters were determined for a wide range of flocculants concentrations. The influence of D-g-PAA internal structure on sedimentation rate and supernatant clarification was studied using the method described in [1].

The kinetics of flocculation process was characterized by the suspension sedimentation rate and the degree of supernatant clarification as optical density (A_{540}) of supernatant liquid after treatment with dose of the flocculants [1].

The analysis of flocculation process parameters has shown that all samples posses high flocculative ability, but branched polymers drastically exceed linear ones in supernatant clarification. Flocculation efficiency is higher for copolymers with long PAA chains and the short distance between tethering points. Anionic samples (both branched and linear) stabilize small particles of kaolinite at $C_{polymer}$<0.005 g/dl, but with increase in concentration are more efficient as nonionic ones in rate of flocculation as well as supernatant clarification.

1. *Kutsevol, N., Soushko, R., Shyichuk, A., and Melnyk, N.: Molecular Crystals and Liquid Crystals, 2008,* ***483 (01)****, 71 – 77.*

SYNTHESIS AND STRUCTURAL PROPERTIES OF STAR-BRANCHED POLYMERS

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This study is aimed to investigate the effect of the distance between grafts on the internal structure of Dextran-*graft*-Polyacrylamide copolymers in aqueous solution. The star-branched polymers with Dextran core (M_w=20000 and M_w=70000) and Polyacrylamide corona with 5, 10, 15 and 20 grafts have been synthesized and characterized by Self-exclusion chromatography (SEC) with light scattering and refractometer detectors. SEC

results were analyzed in terms of the weight-average molar mass M_w, the z-average radius of gyration R_z and samples polydispersity M_w/M_n in comparison with linear Polyacrylamide.

As it was predicted in the theoretical work the compactness of polymer brushes should depend on the conformation of grafted chains. Analysis of molecular parameters of polymer brushes Dextran-*graft*-Polyacrylamide has shown that their compactness that is expressed as R^2/M_w, depends on both factors simultaneously: number of Polyacrylamide grafts and their conformations. Also, the values of the z-averaged radius of gyration, R_z, are higher for linear PAA of the similar molecular weight as graft copolymers as it was predicted in theoretical works.

Thus, due to structure peculiarities the local concentration of functional groups in branched polymers is notably higher than in linear ones, therefore they are of great importance for creation of new multifunctional materials for medicine, biology and industry. Especially such compounds can be interesting for immobilization of metallic nanoparticles of high surface area per volume. The first experiments have shown that spherical polymer brushes Dextran-*graft*-Polyacrylamide are efficient polymer matrices for nanoscale metal catalysts which lead to the formation of well-defined particles and also act as a stable carrier system to use as a catalyst in aqueous system. Polymer brushes are more efficient than linear polymers (Figure).

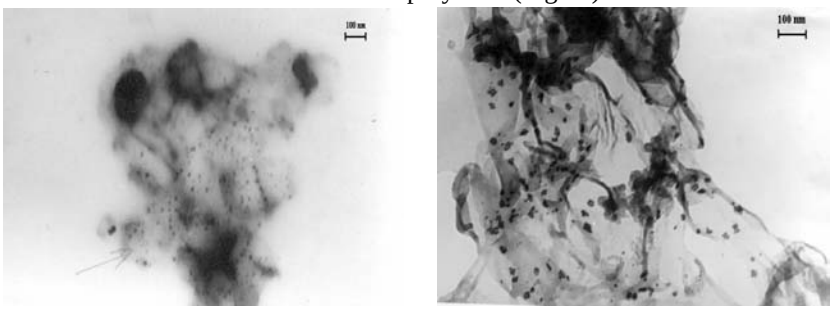

Figure. The image of Pt nanoparticles in D-g-PAA (left) and PAA matrices (right).