

2nd International Conference and Exhibition on

POLYMER CHEMISTRY

November 15-17, 2017 | San Antonio, USA

The new polymeric flocculants for water treatment

Kaldibek Abdiyev¹, Yerbol Dauletov², Nurxat Nuraje³, Zhexenbek Toktarbay¹ and Mariamkul Zhursumbaeva²¹Kazakh-British Technical University, Kazakhstan²Kazakh National Research Technical University named after K. Satpaev, Kazakhstan³Texas Tech University, USA

Protection of the environment from pollution is an urgent problem of the time. In this regard, the problem of natural and wastewaters treatment is the most important, since it is closely linked to the protection of water resources. In recent decades, flocculants are used as reagents for the purification of wastewater from the various contaminants. Their use can improve the quality of the treated water and increase the productivity of treatment facilities. Despite the large amount of research, the problem of natural and wastewater treatment cannot be considered to be solved. This causes to create new and more effective as well as easily available flocculants and improve existing water treatment technology. We have synthesized novel cationic and anionic flocculants (copolymers) based on industrial monomers such as 2-acrylamido-2-methylpropanesulfonic acid, N,N-dimethyl-N,N-diallylammonium chloride (DMDAAC), N,N-dimethylacrylamide, vinyl butyl ether and vinyl ether of monoethanolamine (VEMEA). Synthesis of flocculants performed by free radical copolymerization at 60-70 °C in the presence of an initiator (AIBN, ammonium and potassium persulfates) in aqueous and organic solutions in an inert gas (argon) atmosphere. Then obtained copolymers were purified by precipitation with acetone. Molar compositions of the synthesized copolymers were determined by elemental analysis, IR and NMR spectroscopy and conductometric and potentiometric titration. The synthesized copolymers were tested in the laboratory as flocculants for the treatment of wastewater of drilling fluids, suspensions of bentonite clay, liquid manure of animals and birds, wastewater from dispersed and colloidal particles. Experimental data showed that the synthesized copolymers could be used for purification of industrial wastewater from various highly impurities. Also it was found that DMDAAC-VEMEA copolymer had biocidal properties and could be used to inhibit the growth of sulfate-reducing bacteria.

Biography

Kaldibek Abdiyev is an Associate Professor, engaged in the synthesis and research of physicochemical and surface properties of polymer surfactants and their interpolymer complexes.

abdiyev_almaty@rambler.ru

Notes: