

POLYMERIZATION IN A STATIC HETEROGENEOUS MONOMER-WATER SYSTEM

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Synthesis of aqueous dispersion of polymers with a given particle diameter is one of the topical problems of modern polymer chemistry. The main method of synthesis of such systems is polymerization in heterogeneous monomer-water system. Usually polymerization is conducted in highly disperse systems or what is common to be considered as emulsion polymerization. It is obvious that in order to obtain a monodisperse system, it is necessary to know the mechanism of nucleation and formation of dispersed phase particles. The main purpose of this report is to present the results of experimental studies that showed the generation of a polymer dispersed phase is due to polymerization reactions and physico-chemical processes that occur at the monomer-water interface. In these experiments, the polymerization is carried out without the use of an emulsifier under static conditions in styrene-water, vinyl acetate-water and chloroprene-water systems. In order to describe the mechanism of nucleation of a dispersed phase, we used the fundamental theory of the formation of phases from solutions and showed that the driving force of this process is the supersaturation of water by a monomer, which is determined and maintained by heat by polymerization reactions, which proceed in the interface. Static system is a model of the drop of monomer-water and the report proves that the above-mentioned mechanism for the generation of dispersed particles also occurs in the case of emulsion polymerization. The report includes photographs showing the topology of the nucleation a particle of a dispersed phase in the polymerization process and the methods for determining their density, also gives recipes and conditions for the synthesis of monodisperse stable latexes. The report presents electron microscopic photographs of monodisperse latexes.

Biography

Arnos Arshaki Hovhannisyan has received his Doctorate from the Moscow Institute of Fine Chemical Technologies. He is the Doctor of Chemical Sciences, Professor, Head of Laboratory of Polymer Dispersions (Scientific Technological Centre of Organic and Pharmaceutical Chemistry of NAS Armenia). He is the author of more than 80 papers in reputed journals and a monograph titled *The Theory of Emulsion Polymerization*. He has been serving as an Editorial Board Member for the *Evolution in Polymer Technology Journal*.

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