INTERPOLYMER REACTIONS BETWEEN (CO)POLYMERS OF 2-
HYDROXYETHYL ACRYLATE AND POLY(CARBOXYLIC ACIDS)

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Unlike the hydrophilic homopolymer of 2-hydroxyethyl acrylate, polyHEA, aqueous solutions of the novel copolymers of HEA with hydrophobic vinyl butyl ether (VBE) undergo phase transitions at a lower critical solution temperature (LCST). In this study it was shown that the values of LCST could be easily changed in the range from 5 to 60°C by varying of content of hydrophobic component in the copolymer composition.

Interactions of polyHEA and [2-hydroxyethyl acrylate-co-vinyl butyl ether] with poly(carboxylic acids) in aqueous solutions were studied by turbidimetry, viscometry, and FT-IR. The formation of interpolymer complexes, IPC, stabilized by hydrogen bonds was found. The critical value of pH of complex formation, pH_{crit}, was used as a criterion of complexation ability of macromolecules. An increase in (co)polymer concentration, molecular weight of poly(acid), ionic strength of solution as well as addition of surfactant results in stabilization of IPC. Transition from poly(acrylic acid) to poly(methacrylic acid) is accompanied by a noticeable shift of the pH_{crit} value to the higher value region that indicates on better complexation ability of poly(methacrylic acid) because of additional stabilization of the complex by hydrophobic interactions of methyl groups of poly(methacrylic acid). It was shown that the growth of content of VBE units in copolymer composition results in shifting of values of the pH_{crit} to the higher values area that indicates on enhancing of their complex formation ability.