Synthesis and solution properties of a new pH-responsive polymer containing amino acid residues. Al-Muallem, Hasan A.; Wazeer, Mohamed I. M.; Ali, Sk. Asrof. Department of Chemistry, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia. Polymer (2002), 43(15), 4285-4295.

Abstract

The amine salt, N,N-diallyl-N-carboethoxymethylammonium chloride was cyclopolymd. in water using ammonium persulfate as an initiator to afford a cationic polyelectrolyte which on acidic hydrolysis of the pendant ester groups gave the corresponding cationic acid salt (CAS). The CAS was converted into an anionic polyelectrolyte (APE) and polybetaine (PB). The soln. properties of the APE having two basic functionalities were investigated in detail by potentiometric and viscometric techniques. Basicity consts. of the amine as well as the carboxylate groups in APE are 'apparent' and as such follow the modified Henderson-Hasselbalch equation; as the degree of protonation (α) of the whole macromol. increases, the protonation of the amine nitrogen and carboxylate groups becomes increasingly more difficult and easier, resp. While the APE, PB and CAS were found to be sol. in salt-free water, the corresponding PB and CAS of the SO2 copolymers of the amine salt 1 were found to be insol. in water.