



United States Patent [19]

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- [54] **HYDROPHILIC ACRYLIC COPOLYMERS AND METHOD OF PREPARATION**
- [75] Inventors: **Jan Lovy**, Plainsboro, Township, Middlesex County; **Vladimir A. Stoy**, Princeton, both of N.J.
- [73] Assignee: **Kingston Technologies, Inc.**, Dayton, N.J.
- [*] Notice: The portion of the term of this patent subsequent to Jul. 24, 2007 has been disclaimed.
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- [51] Int. Cl.⁵ **C08F 220/52; C08F 8/32**
- [52] U.S. Cl. **526/342; 525/329.1; 525/329.2; 525/329.3; 525/379; 525/418; 526/310; 526/317.1; 526/341; 528/363**
- [58] Field of Search **526/310, 342, 341; 525/379; 528/363**

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Primary Examiner—Joseph L. Schofer
Assistant Examiner—Fred Zitomer
Attorney, Agent, or Firm—Kenneth P. Glynn

[57] **ABSTRACT**

Novel amphoteric acrylic and methacrylic copolymers are described comprising cationic units of pendant N-substituted amidine and anionic units of acrylic or methacrylic acid and/or acidic groups carried by substituents of N-acrylamide, N-methacrylamide, N-acrylamidine or N-methacrylamidine. One preferred embodiment is a copolymer in which at least some types of functional groups are organized in blocks. Particularly preferred are blocks of pendant nitrile groups. Preferred compositions have the said N-substituents of the amides and/or amidines containing polar groups other than primary amines. Particularly preferred polar groups are tertiary amines, quaternary ammonium salts, hydroxyls and sulfonic acid. These copolymers may optionally be covalently or physically crosslinked and swellable rather than soluble in water. A method of preparing said amphoteric acrylic and methacrylic copolymers is described comprising the reaction of selected polymers with a multitude of pendant CN groups in mutual 1,3 positions with a primary amine in presence of water. One preferred method is the reaction of CN groups with the primary amine and water in the presence of a solvent of the said polymer and/or in the presence of a basic catalyst. The particularly preferred embodiment is a reaction of CN groups containing polymer dissolved in a mixture of the polymer solvent, a primary amine, water and an optional basic catalyst.

11 Claims, No Drawings