

研究论文

具有伸展构象的温度和pH双重敏感的P(DEAM-co-MAA)水凝胶的合成与性质研究

刘守信¹, 房喻^{*1}, 柳明珠², 王明珍¹, 王转绒¹

(¹陕西师范大学化学与材料科学学院 西安 710062)

(²兰州大学化学化工学院 兰州 730000)

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摘要 分别在碱性条件(pH 9.48)和中性条件(pH 7.00)下, 通过自由基聚合合成了具有伸展构象的、温度和pH双重敏感的P(DEAM-co-MAA)水凝胶. 凝胶的去溶胀动力学和扫描电镜图表明:

在碱性溶液中MAA中的羧基(COOH)解离为羧基阴离子(COO⁻), 羧基阴离子之间的静电斥力加强, 导致高分子链的伸展构象, 所得的凝胶具有伸展构象、伸展的网络结构和良好的刺激响应行为.

关键词 [温度和pH双重敏感](#) [水凝胶](#) [去溶胀动力学](#) [伸展构象](#) [扫描电镜](#)

分类号

Synthesis and Characterization of Temperature- and pH-Sensitive Poly(*N,N*-diethylacrylamide-co-methacrylic acid) Hydrogels with Expanded Conformations

LIU Shou-Xin¹, FANG Yu^{*1}, LIU Ming-Zhu², WANG Ming-Zhen¹, WANG Zhuan-Rong¹

(¹ School of Chemistry and Materials Science, Shaanxi Normal University, Xi'an 710062)

(² College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou 730000)

Abstract A temperature- and pH-sensitive poly(*N,N*-diethylacrylamide-co-methacrylic acid) hydrogel with expanded conformations was synthesized in an alkaline solution of Tris-HCl buffer solution at pH 9.48. The deswelling dynamics of hydrogels and scanning electron microscopy micrographs revealed that the unique properties achieved were attributable to the expanded conformations generated in the alkaline solution during the copolymerization reaction. As a result of the dissociation of the carboxyl groups of MAA to carboxylate anions, the electrostatic repulsion between carboxylate anions was strong to lead to expanded conformations of polymer chains. Therefore, the network of the hydrogels thus obtained was extremely expanded to exhibit fast temperature sensitivity.

Key words [temperature- and pH-sensitivity](#) [hydrogel](#) [deswelling dynamics](#) [expanded conformation](#) [scanning electron microscopy](#)

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通讯作者 房喻 yfang@snnu.edu.cn

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