

海藻酸钠膜表面的配位结构及催化MMA聚合的性能

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摘要 将海藻酸钠(SA)与CuCl₂·2H₂O反应得到一种配位聚合物海藻酸钠(Cu-An)。以ESR、电导率、IR和SPS方法对此配位聚合物进行表征, 确定了组成与结构; 同时研究了甲基丙烯酸甲酯(MMA)在该配位聚合物膜、HSO₃⁻和水体系催化引发作用下的聚合反应历程。结果表明,

配位聚合物的中心离子Cu²⁺与两个海藻酸(An)

链节单元上的两个羧基氧原子和两个离解氢原子的羧基氧原子以共价型配位, 配位数为

4。MMA在上述的催化引发体系中是按照自由基加聚反应历程进行聚合的, PMMA呈无规结构。Cu-

An在催化引发体系中起着催化剂的配位催化作用。

关键词 [海藻酸钠](#) [氯化亚铜](#) [铜络合物](#) [海藻酸](#) [催化剂](#) [电子自旋共振](#) [电导率](#) [红外分光光度法](#) [X射线衍射分析](#) [高聚物](#) [结构表征](#) [甲基丙烯酸甲酯](#) [自由基聚合](#)

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Coordination structure of copper alginate film and its catalytic property for MMA polymerization

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Abstract The film of copper alginate coordinated polymer was obtained by stirring sodium alginate film in a 15% CuCl₂·2H₂O solution. The copper alginate film was characterized by ESR spectroscopy, specific conductivity, IR spectrometry and SPS. Its composition and surface structure were determined. The catalytic property of copper alginate for polymerization of MMA was studied. The reaction mechanism of MMA polymerization in copper alginate and HSO₃⁻ solution system is discussed. Experimental results show that the copper ion of copper alginate is coordinated with two carboxyl hydroxyl oxygen atoms and two deprotonic carboxyl hydroxyl oxygen atoms of two alginate units by covalent bond, the coordination number is four. The copper alginate is shown to be active at pH=7 for catalyzing the polymerization. The copper alginate serves as catalyst in coordination catalysis. MMA polymerized by free radical addition polymerization and the PMMA obtained possessed random structure.

Key words [SODIUM ALGINATE](#) [CUPROUS CHLORIDE](#) [COPPER COMPLEX](#) [LIGNIC ACID](#) [CATALYST](#) [ELECTRON SPIN RESONANCE](#) [ELECTRICAL CONDUCTIVITY](#) [INFRARED SPECTROPHOTOMETRY](#) [X-RAY DIFFRACTION ANALYSIS](#) [HIGH POLYMER](#) [STRUCTURE CHARACTERISTICS](#) [METHYL METHACRYLATE](#) [FREE RADICAL POLYMERIZATION](#)

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