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Kozulic

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[54] **CROSS-LINKED LINEAR
POLYSACCHARIDE POLYMERS AS GELS
FOR ELECTROPHORESIS**

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Related U.S. Application Data

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[51] **Int. Cl.⁶** **C08L 5/00; C08L 1/28**

[52] **U.S. Cl.** **525/54.3; 536/84; 536/87; 536/123.1**

[58] **Field of Search** 536/1.11, 51, 84, 536/102, 112, 114, 123.12; 524/27, 35, 44, 47, 54; 525/54.3, 54.31

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[57] **ABSTRACT**

A bed of water insoluble, transparent, cross-linked gel, suitable for use in electrophoresis, is formed by dissolving a polysaccharide, including at least one linear polysaccharide such as agarose or hydroxyethyl cellulose, in a suitable solvent, such as water; adding a cross-linking agent, which is not charged nor becomes charged upon contact with water in a pH range of 2 to 11, to the solution; and incubating this mixture in a quiescent state to substantially simultaneously react the polysaccharide and the cross-linking agent and to gel the reaction product into a bed. The polysaccharide is at least one linear polysaccharides, but that linear polysaccharide may also be admixed with other linear polysaccharides and/or at least one non-linear polysaccharide. Synthetic organic polymers may also be admixed in the cross-linking reaction mixture. The polysaccharide, and/or other polymers in the cross-linking reaction mixture may be charged but are preferably uncharged, but if charged, the charge must be low enough so that the charge of the resulting gel, if any, will not interfere with the use of the gel to support an electrophoresis process. When the linear polysaccharide is agarose, the gel has improved elasticity, transparency, and, when the gelled cross-linked product is used to support electrophoresis, improved resolution of small DNA molecules as compared to the results achieved by using an agarose polymer which has not been cross-linked according to this invention.

21 Claims, 6 Drawing Sheets