

# United States Patent [19]

Sumino et al.

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[54] **IMMOBILIZATION OF MICROORGANISMS BY ENTRAPMENT**

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[58] Field of Search ..... **435/174, 177, 178, 182, 435/176, 261, 262**

[56] **References Cited**

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[57] **ABSTRACT**

Microorganisms such as in activated sludge are immobilized by forming a mixture containing the microorganisms, a monomer or prepolymer and alginic acid or water soluble alginate, and dropping the mixture into a water solution of polyvalent metal ion and a polymerization initiator to form particles containing the microorganisms. Preferably, the monomer is an acrylamide monomer, the prepolymer is an ester of an acrylic acid group and polyethylene glycol and the polymerization initiator is a persulfate. By this method, the microorganisms are protected from toxic substances such as the polymerization initiator during immobilization.

**11 Claims, 3 Drawing Sheets**