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[54] **HETEROGENEOUS POLYMERIZATION IN CARBON DIOXIDE**

4,933,404 6/1990 Beckmann et al. .

[75] **Inventors:** Joseph M. DeSimone; Elise E. Maury, both of Chapel Hill; James R. Combes, Carboro; Yusuf Z. Menciloglu, Chapel Hill, all of N.C.

FOREIGN PATENT DOCUMENTS

0301532 2/1989 European Pat. Off. .

[73] **Assignee:** The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

OTHER PUBLICATIONS

DeSimone et al.; *Synthesis of Fluoropolymers in Supercritical Carbon Dioxide*; Science 257; 945-947; (1992).

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Primary Examiner—Joseph L. Schofer

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Assistant Examiner—N. Sarofim

Attorney, Agent, or Firm—Bell, Seltzer, Park & Gibson

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[52] **U.S. Cl.** 526/201; 526/194; 526/346

[58] **Field of Search** 526/201, 194, 346

[57] ABSTRACT

The heterogeneous polymerization of water-soluble polymer in CO₂ is disclosed. The method comprises providing a heterogeneous reaction mixture comprising CO₂, a monomer, and a surfactant, then polymerizing the monomer to form a water-soluble polymer.

[56] References Cited

U.S. PATENT DOCUMENTS

3,522,228 7/1970 Fukui et al. .
4,748,220 5/1988 Hartmann et al. .

10 Claims, 2 Drawing Sheets