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Process for Synthesizing a New Series of Fluorocarbon Polymers

A laboratory process has been devised for the preparation of a new series of fluorocarbon polymers. The resulting products include resins having elastomeric properties at ambient and cryogenic temperatures down to -196°C and rigid or semirigid resins that are resistant to oxidizing acids and solvents which attack conventional fluorocarbon polymers.

In general, the new fluorocarbon materials are prepared under carefully controlled conditions in a two-step reaction involving a polyperfluoropolyene (typified by polyperfluorobutadiene), fluorine, and any monomer that can undergo free-radical polymerization (typically highly fluorinated compounds such as tetrafluoroethene and perfluorobutadiene). In the first step, gaseous fluorine is added to the selected polyperfluoropolyene to create fluorocarbon radicals, with reactive sites at the unsaturated carbon atoms on the polymer chains. In the second step, the monomer is introduced, after evacuation of the fluorine gas from the reaction vessel, and allowed to copolymerize

with the free radicals formed in the first step for a specified time.

Note:

Requests for further information may be directed to:

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Reference: TSP70-10453

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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