A GENERAL LABORATORY SYNTHESIS AND NEW MANUFACTURING TECHNOLOGY FOR PERFLUOROPOLYETHERS

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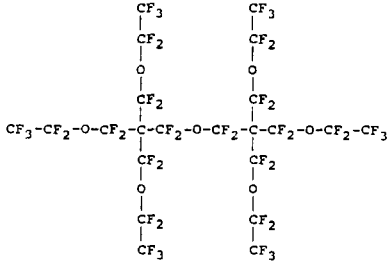
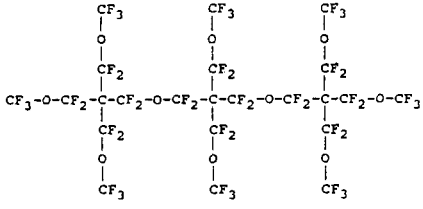
Recent advances in the R.J. Lagow direct fluorination technology have enabled an entire highly new synthetic method for many new perfluoropolyethers and branched perfluoropolyethers via direct fluorination. Over the last several years, Professor Lagow's colleagues at Exfluor Research Corporation have developed many gallon per hour reaction chemistry suitable for scale-up of important new perfluoropolyether structures. Two of the fluid structures that will be commercialized are very interesting. The first structure is a strictly alternating copolymer of ethylene oxide and methylene oxide which currently has the longest liquid range of any molecule containing carbon [1]: $(-CF_2O-CF_2CF_2O-)_n$. The second perfluoropolyether structure was long sought by a number of laboratories: $(-CF_2O-CF_2-O-)_n$. Other laboratories had attempted to polymerize carbonyl fluoride to synthesize material and used a number of other approaches as well. We succeeded in capping this structure with perfluoro ethyl groups to provide stability [2]. Additionally we will report on spherical perfluoropolyethers such as:





Other novel perfluoroether compounds may also be discussed.

1 T.R. Bierschenk, T.J. Juhlke and R.J. Lagow, U.S. Patent 4 760 198 (1988).
2 T.R. Bierschenk, T.J. Juhlke and R.J. Lagow, U.S. Patent 4 827 042 (1989).