
Materials Research Science and Engineering Center
(MRSEC)
Summer 2000 Participant



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Fluorination of Polymers by Free Radical Addition of Perfluoroalkyl Iodides

The focus of our research is the fluorination of polymers by free radical chemistry. The method implemented is the addition of perfluorohexyl iodide initiated by triethylborane to a variety of model polymers. We are mainly interested in the fluorination of polydienes because fluorinated polymers have properties including: low surface energies, high chemical and thermal stabilities, high solubilities in supercritical CO₂, low refractive indices and dielectric constants. Our experiments thus far have been to understand the kinetics of the free radical addition reactions. Contrary to what was expected the trend we found is a decrease in the extent of reaction with an increase in the time the reaction runs. Future work will include verification of this trend and the addition of different amounts of perfluorohexyl iodides to achieve different extents of reactions.