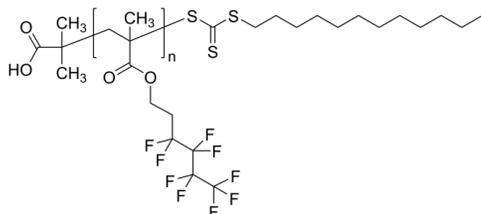


Sample Name: Poly(2-[perfluorobutyl]ethyl methacrylate)

Or Poly (3,3,4,4,5,5,6,6,6-nanofluorohexyl methacrylate)

Sample #: P42191C-9FBEMA

Structure:



Composition:

Mn x 10 ³	PDI
380.0	1.4
CAS Number: 1799-84-4	

Synthesis Procedure:

The polymer was prepared by RAFT polymerization process.

Solubility:

High Molecular weight product is insoluble in Acetone.

Below you will see the solubility of the product in different solvents:

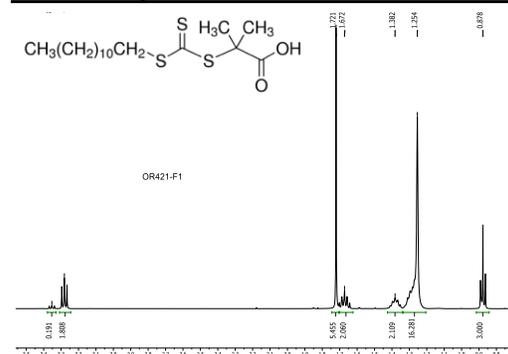
Solvent	Solubility
Acetone	Insoluble
THF	Insoluble
DMF	Insoluble
CHCL3	Insoluble
Hexafluoroisopropanol	Soluble
Pentafluorobenzene	Soluble

Characterization:

Fluorinated polymers have unique properties including low Refractive Indices (RIs) that make molecular weight determination by alone RI detector prone to error. The low molecular weights polymer Mn < 10K can be determined qualitatively in THF at 35 °C using triple detectors and compare the data with values obtained by HNMR. Poly (meth)acrylates with high contents of Fluorene contents was found insoluble in acetone (Mn > 20,000) and can be solubilize in the

presence of fluorinated solvents such as hexafluoroisopropanol. The fluorinated solvents can increase the solubility of the polymer and improve the signal-to-noise ratio of an RI detector. We have used mixture of Pentafluorobenzene: hexafluoroisopropanol solvents (80:20) v/v ratio to elute these polymers with high contents of fluorene as pendant groups. To accurately determine the molecular weights of these polymers, a triple detection method that utilizes an RI detector, right-angle light scattering, and low-angle light scattering ($\lambda_0 = 670 \text{ nm}$) detectors, and a differential viscometer was employed. The results were compared using PMMA standards.

¹H NMR spectrum of the RAFT macroinitiator:



HNMR of the polymer carried out in Acetone:

