

Supporting Information

Hot Nitric Acid Diffuse in Fluoroelastomer Composite and its Degradation

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1. NMR

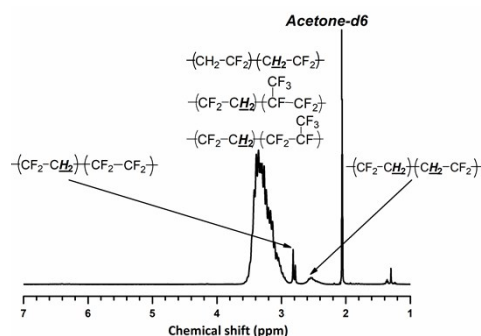


Figure S1 ^1H -NMR spectrum of fluoroelastomer in acetone- d_6 .

The ^1H -NMR spectrum of fluoroelastomer shows the presence of the multiplets at 3.55~2.70 ppm assigned to methylene groups of $-\text{CF}_2\text{CH}_2-\text{CF}_2\text{CH}_2-$, $-\text{CF}_2\text{CH}_2-\text{CF}_2-\text{CF}(\text{CF}_3)-$, $-\text{CF}_2\text{CH}_2-\text{CF}(\text{CF}_3)\text{CF}_2-$ and $-\text{CF}_2\text{CH}_2-\text{CF}_2\text{CF}_2-$ sequence resulting from VDF-VDF, VDF-HFP and VDF-TFE additions, respectively. Actually, tail-to-tail VDF addition ($-\text{CF}_2\text{CH}_2-\text{CH}_2\text{CF}_2-$) is also identified by the presence of the peak centered at 2.53 ppm assigned to both methylene groups in a role (as an inversed addition).

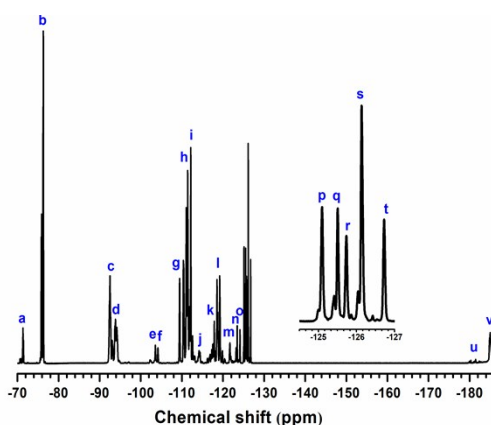


Figure S2 ^{19}F -NMR spectrum of fluoroelastomer

As shown in Figure S2, the multiplets at -70~-76 (a, b), -117~-120 (l) and -180~-185 ppm (u, v) assigned to $-\text{CF}_3$, $-\text{CF}_2-$ and $-\text{CF}$ from HFP sequences, respectively;

the multiplets at -91~-117 ppm (c~k) assigned to $-\text{CF}_2-$ from VDF sequences; and the multiplets at -120~-126 ppm (m~t) assigned to $-\text{CF}_2-$ from TFE sequences.

Thus the main sequences and structure of fluoroelastomer can be showed as Figure S3.

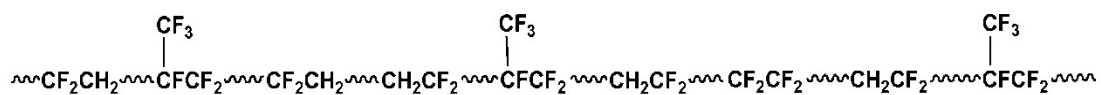


Figure S3 Structure of fluoroelastomer