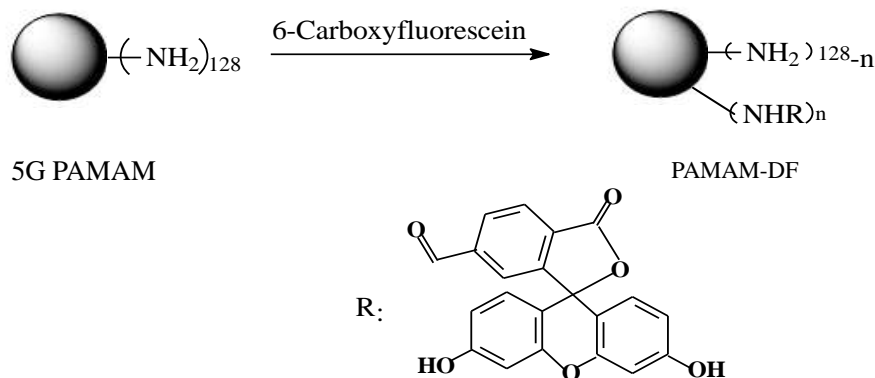


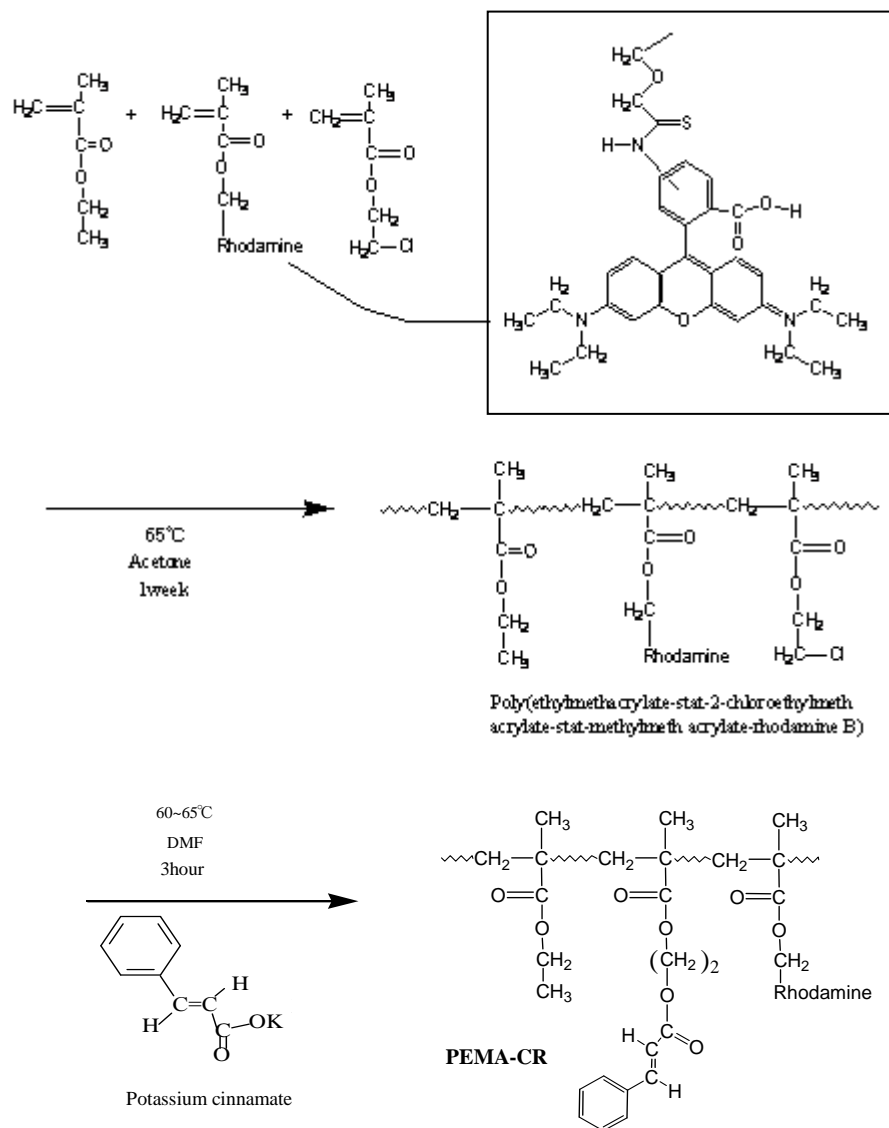
Electronic Supplementary Information

1. Labeling of the 5G PAMAM with 6-carboxyfluorescein (PAMAM-DF)



The typical synthesis process of the PAMAM-DF is as follows: N-Hydroxysuccinimide (HONSu) and 1, 3-dicyclohexylcarbodiimide (DCC) were added to 6-Carboxyfluorescein dissolved in DMSO at room temperature, and stirred for 4h. Then, G5 PAMAM dendrimer (Sigma-Aldrich) dissolved in DMSO were added to the solution and stirred for 5 days at room temperature. The mixture solutions were purified by precipitation and separation. Finally, the filter liquor was diluted with distilled water and dialyzed using a dialysis bag (molecular weight 6000-10000 cut off) till no fluorescein was detected. The ^1H -Nuclear Magnetic Resonance (^1H NMR) spectrum of the resultants showed characteristic peaks corresponding to the chemical structure of 5G PAMAM-DF. ^1H NMR: δ_{H} (400 MHz, DMSO- d_6) 10.14 (s, OH), 8.39 (d, $J=8.07$, Ph), 8.25 (d, $J=8.04$, Ph), 7.85 (s, Ph), 8.35-8.08 (br s, CONH), 6.7-6.6(m, Ph), 6.43-6.38(m, Ph), 6.29-6.19(m, new signals CONH), 3.13(m, NHCH₂), 2.62(m, NCH₂), 2.45(m, CH₂C=O) and 2.23(S, -NH₂).

2. Poly(ethyl methacrylate) doubly labeled with ester cinnamate as a crosslinker and rhodamine B as a marker (PEMA-CR)



The average label content of the resulting polymer determined by UV spectroscopy is 2.1% in mole fraction. The molecular weight and molecular weight distribution of the resulting polymer determined by gel permeation chromatography (GPC) are $M_n = 140\ 000$ and $M_w/M_n = 1.6$, respectively.