Supporting Information



**Figure S1.** The stabilizing mechanisms process.

During the initiation stage, one or two SO4-. free radicals participated in the polymerization, and at least one of these became bonded to the end of macromolecules. Due to the hydrophilicity, the free-radical oligomers remained in the surface layers instead of penetrating into the interior of the latex particle. This process promoted the mutual repulsion of the particles and provided the stability of particles.



**Figure S2.** TEM images of: (a) Sample A, (b) Sample C, and (c) Sample D (c) Sample E TENs.

Figure S2 showed the morphology of other samples. Due to the lack of TSH, the Sample A TENs missed the core. The core shell structure of other samples TENs revealed that synthetic procedures are robust.



**Figure S3.** Size distribution of the TENs (Samples C, D, and E).

Figure S3 showed the size distribution of other samples. The results agreed with SEM, the size of TENs ranged from 258 nm to 271 nm. But, among Samples TENs, Sample E TENs owned broad size distribution.



**Fig. S4** DSC cures of TENs (Samples C, D, and E).

Figure S4 showed the results of glass transition temperature investigated by DSC. BA acted as a soft monomer during the polymerization process, the glass transition temperature of the copolymer was decreased. Meanwhile, A higher crosslinking density increased the glass transition temperature of the poly shell.