Electronic Supplementary Material (ESI) for Polymer Chemistry

Supporting Information

pH-triggered micellar membrane for controlled release microchips

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Synthesis of PS43k-b-P4VP59k copolymer

The well-defined polystyrene-block-poly(4-vinylpyridine) copolymer can be bought from Polymer source, Inc (Canada) or alternatively prepared by the sequential anionic polymerization using n-butyl lithium (n-BuLi) as an initiator in tetrahydrofuran (THF) at -78 ^{o}C. THF is refluxed and distilled over potassium-benzophenone complex into a polymerization flask. Both styrene (Aldrich) and 4VP (Aldrich) monomers were purified by drying over calcium hydride and distilled under vacuum three times. Styreneand 4VP were added to the initiator solution under nitrogen at -78 ^{o}C sequentially. The final block copolymer was precipitated in excess petroleum ether and dried in a vacuum oven at 70 ^{o}C. The ratio of 4VP to styrene was calculated by NMR (Fig. S2) and the molecular weight of block copolymer was determined by GPC (Fig. S1).

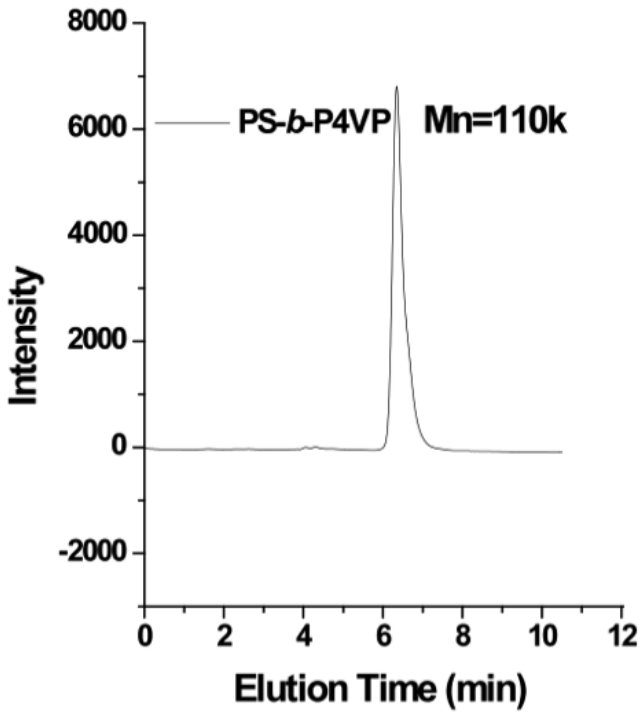

Fig. S1 GPC profile of synthesized PS43k-*b*-P4VP59k copolymer, PDI = 1.1.

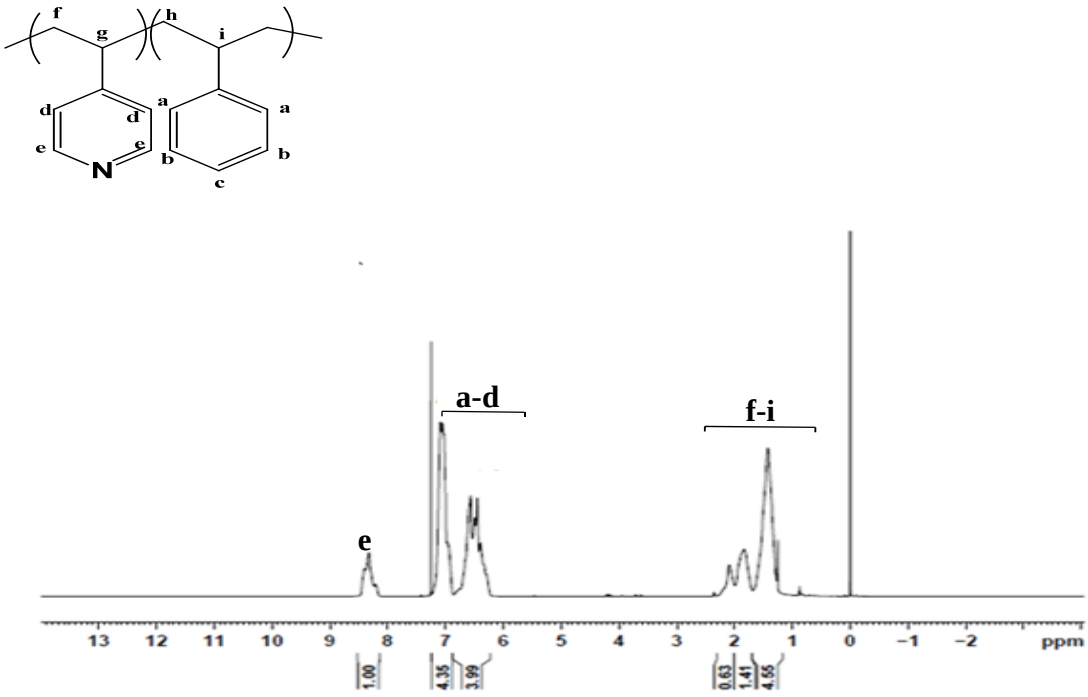

Fig. S2[1]H NMR spectrum of synthesized PS43k-*b*-P4VP59k copolymer.

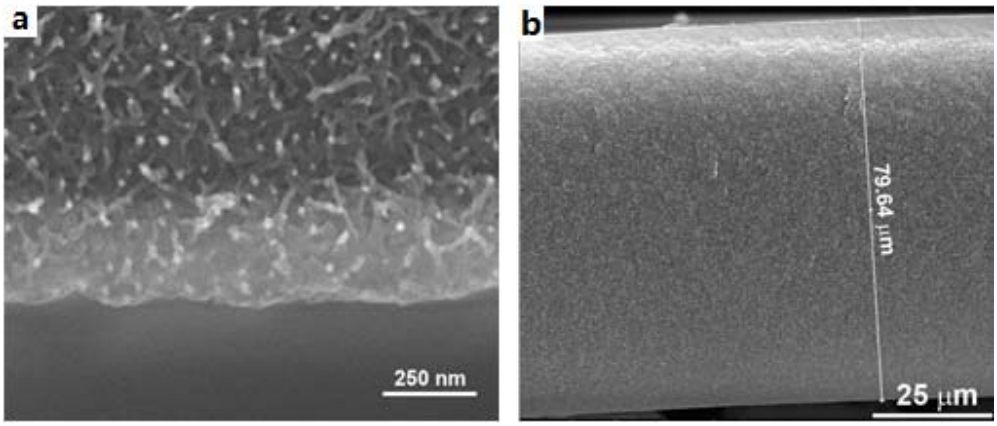

Fig. S3 Cross-section of the membrane cast from 25 wt% PS43k-*b*-P4VP59k DMF solution.