

Polymers Having Dicationic Structure in Dumbbell Shape for Forward Osmosis Process

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Supplementary Information

Figure S1. Proton nuclear magnetic resonance (^1H -NMR) spectrum of octane-1,8-diylbis(tri-*n*-butylphosphonium) bromide (BP8Br₂).

Figure S2. ^1H -NMR spectrum of hexane-1,6-diylbis(tri-*n*-butylphosphonium) bromide (BP6Br₂).

Figure S3. ^1H -NMR spectrum of butane-1,4-diylbis(tri-*n*-butylphosphonium) bromide (BP4Br₂).

Figure S4. ^1H -NMR spectrum of octane-1,8-diylbis(tri-*n*-butylphosphonium) 4-vinylbenzene-sulfonate (SSBP8).

Figure S5. ^1H -NMR spectrum of hexane-1,6-diylbis(tri-*n*-butylphosphonium) 4-vinylbenzene-sulfonate (SSBP6).

Figure S6. ^1H -NMR spectrum of hexane-1,4-diylbis(tri-*n*-butylphosphonium) 4-vinylbenzene-sulfonate (SSBP4).

Figure S7. ^1H -NMR spectrum of tetrabutylphosphonium 4-vinylbenzenesulfonate (SSMP).

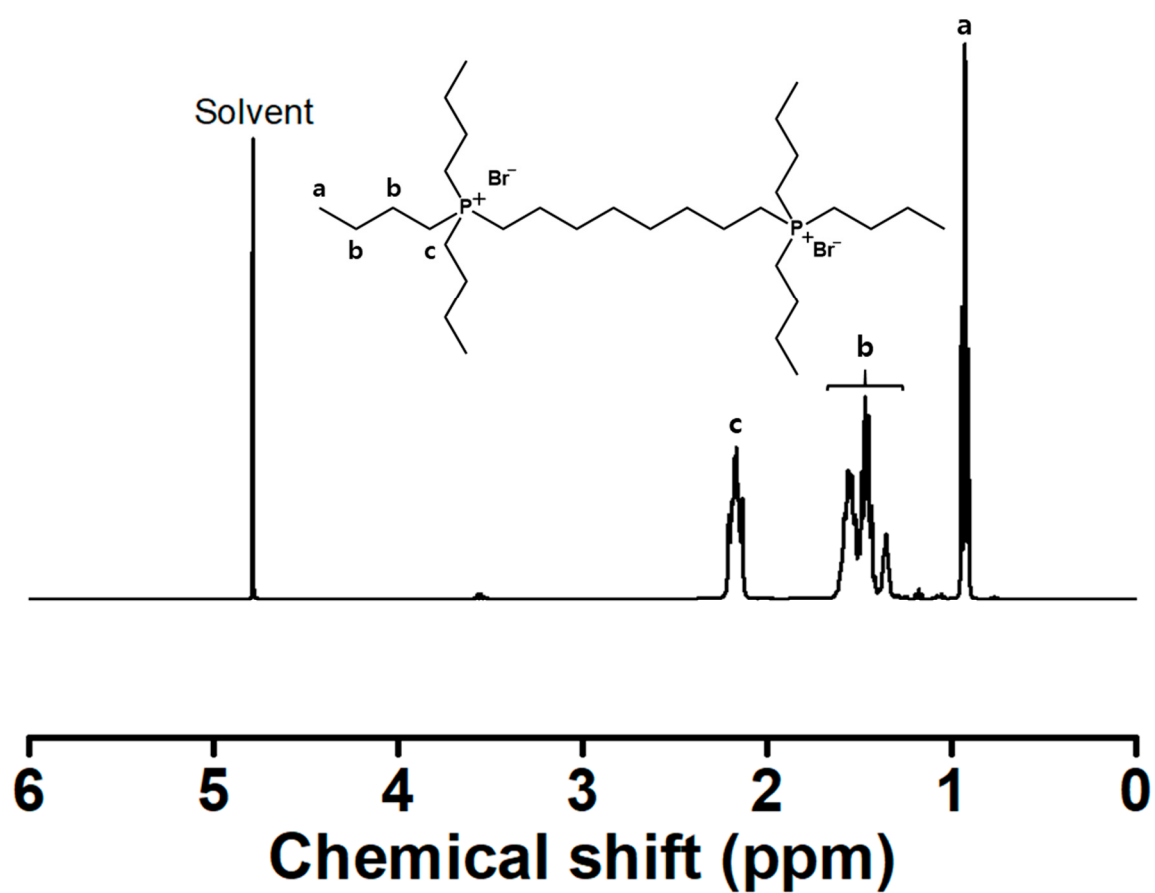


Figure S1. Proton nuclear magnetic resonance (^1H -NMR) spectrum of octane-1,8-diylbis(tri-n-butylphosphonium) bromide (BP8Br₂).

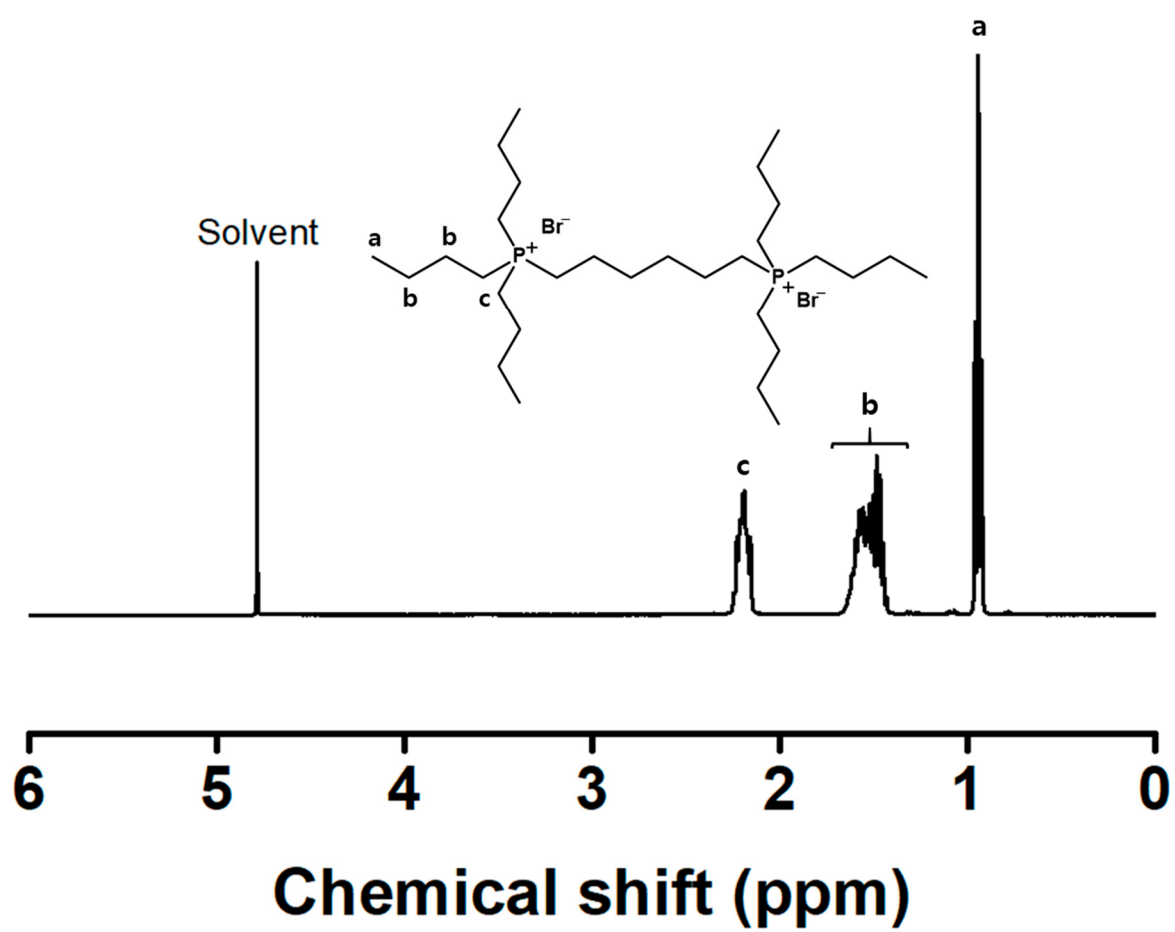


Figure S2. ^1H -NMR spectrum of hexane-1,6-diylbis(tri-*n*-butylphosphonium) bromide (BP6Br₂).

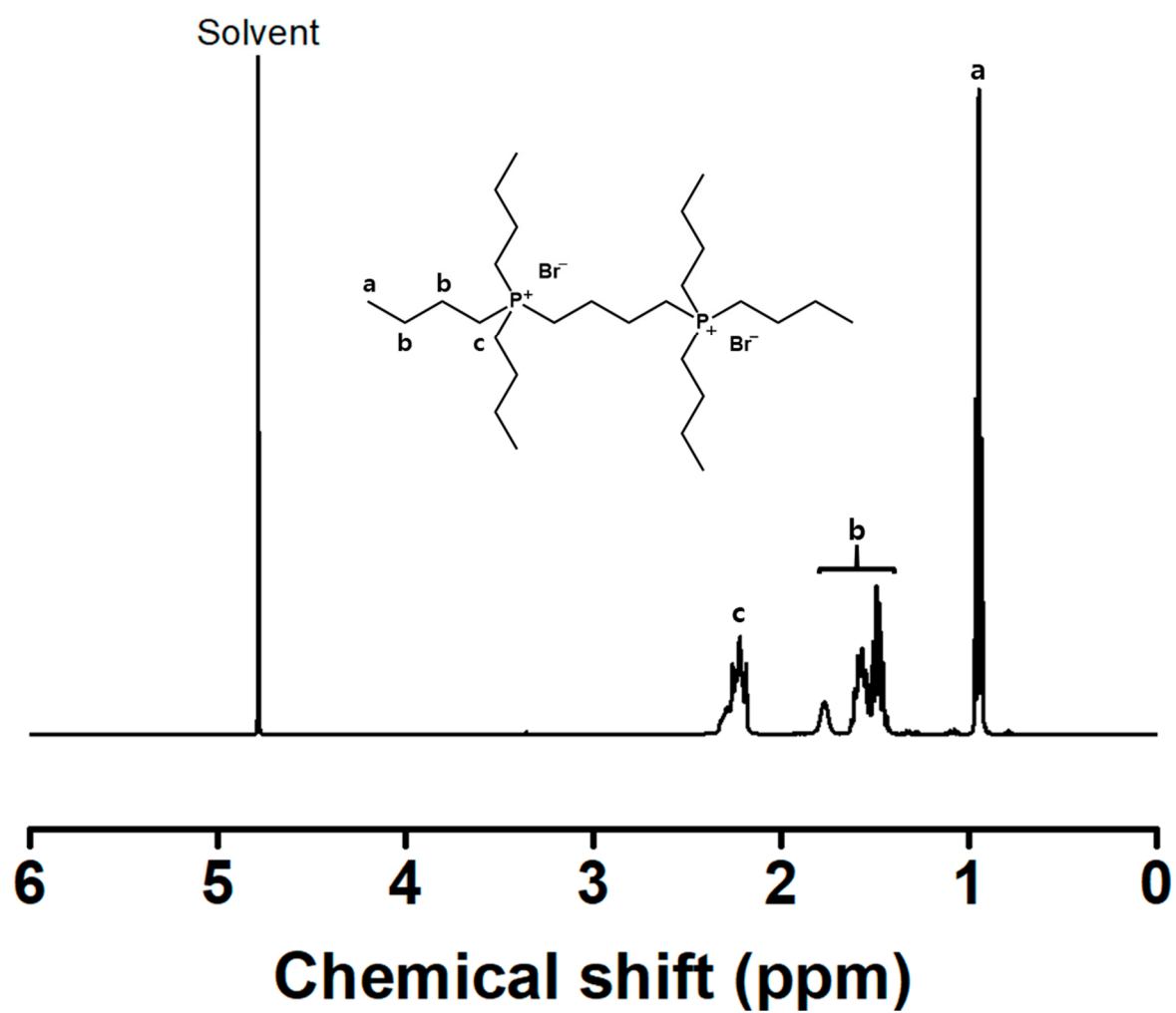


Figure S3. ^1H -NMR spectrum of butane-1,4-diylbis(tri-*n*-butylphosphonium) bromide (BP4Br₂).

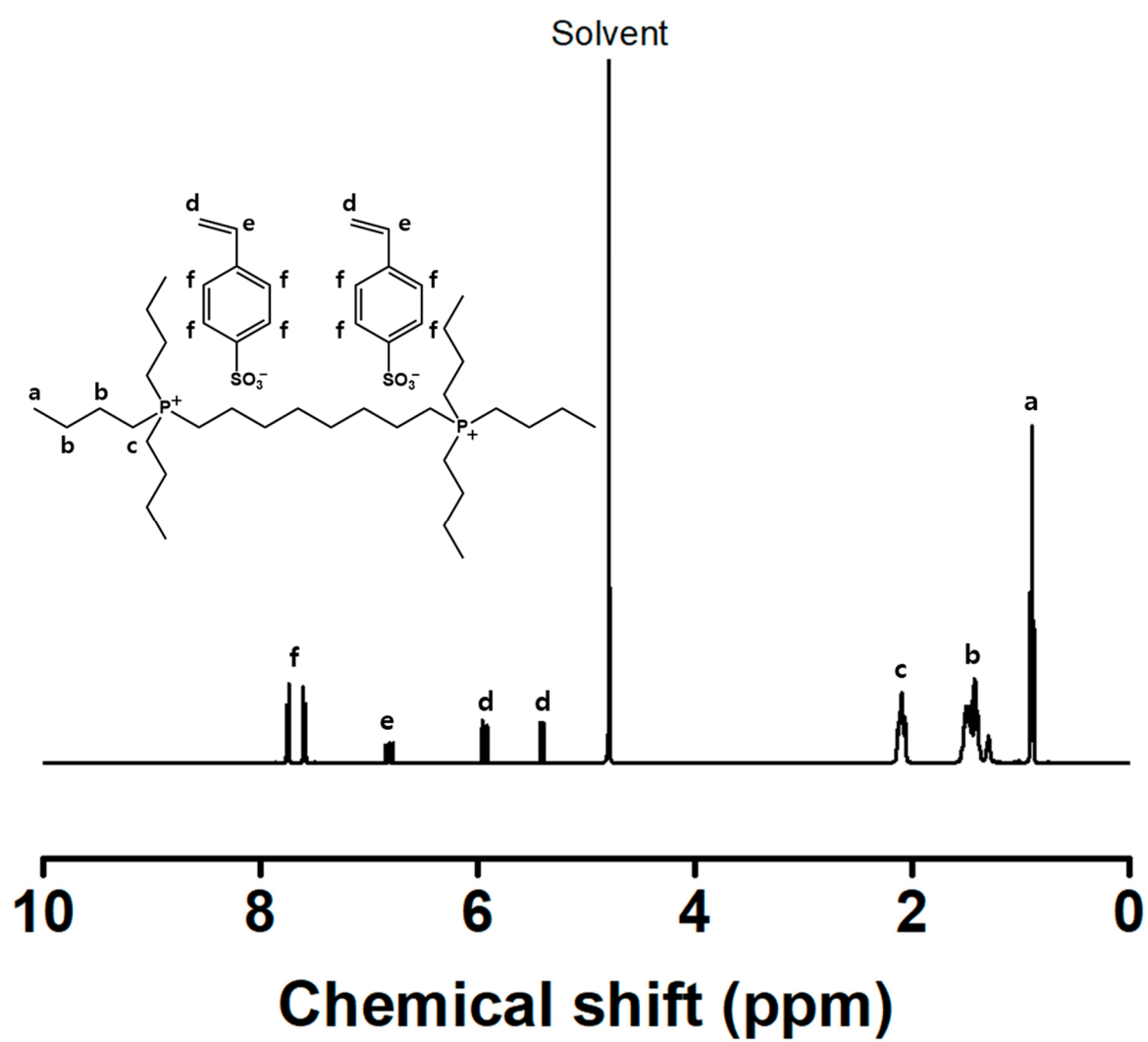


Figure S4. ¹H-NMR spectrum of octane-1,8-diylbis(tri-*n*-butylphosphonium) 4-vinylbenzenesulfonate (SSBP8).

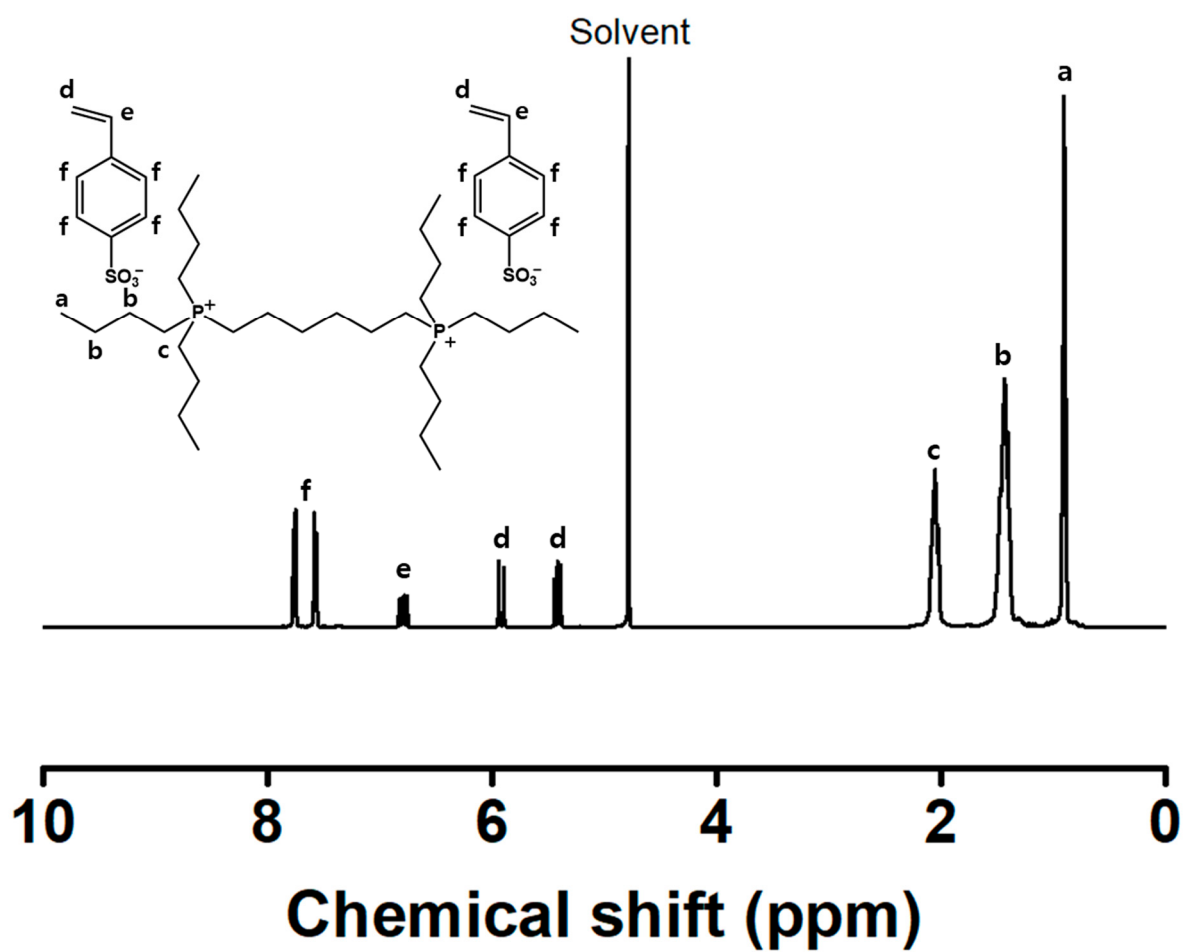


Figure S5. ¹H-NMR spectrum of hexane-1,6-diylbis(tri-*n*-butylphosphonium) 4-vinylbenzenesulfonate (SSBP6).

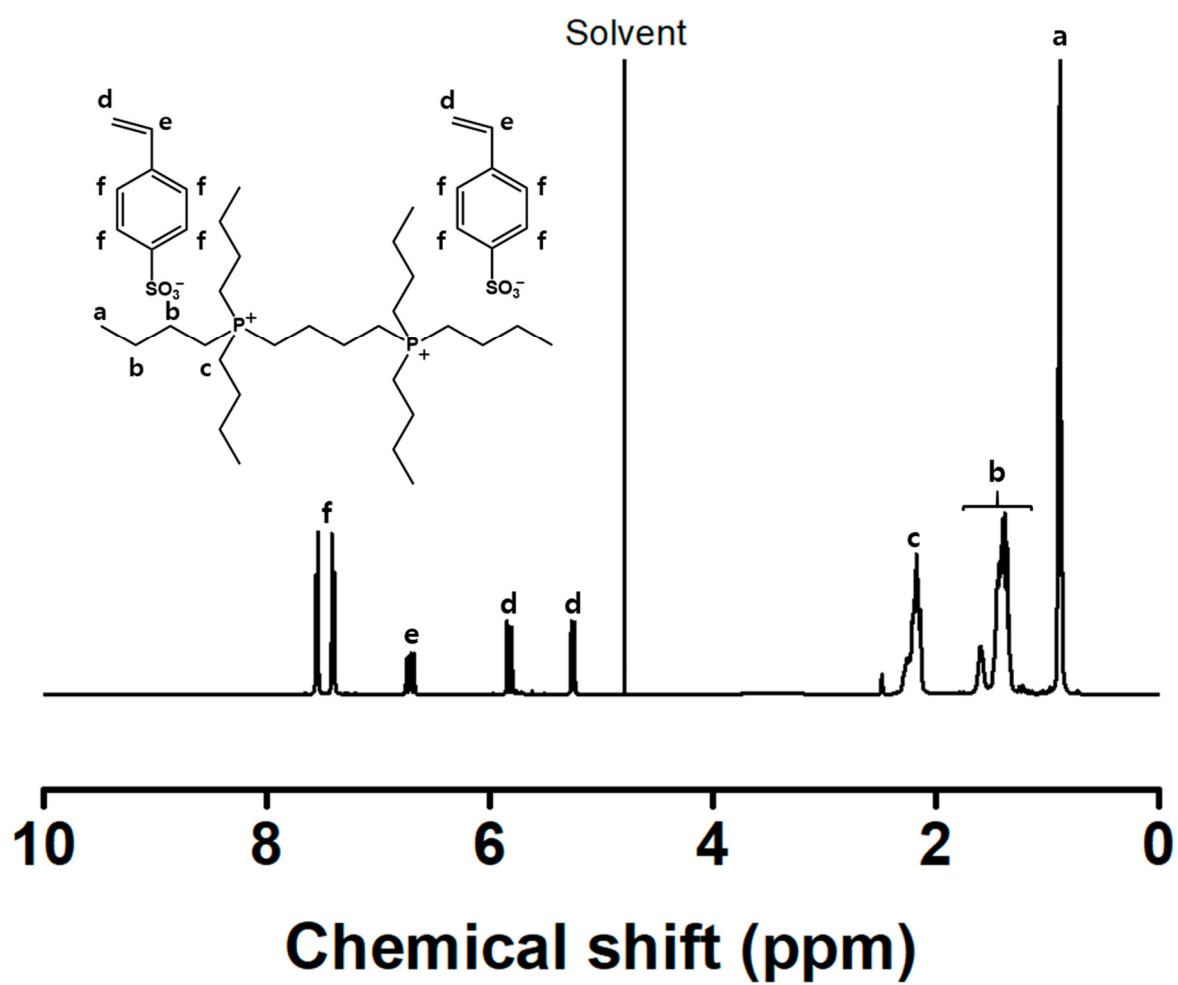


Figure S6. ¹H-NMR spectrum of butane-1,4-diylbis(tri-*n*-butylphosphonium) 4-vinylbenzenesulfonate (SSBP4).

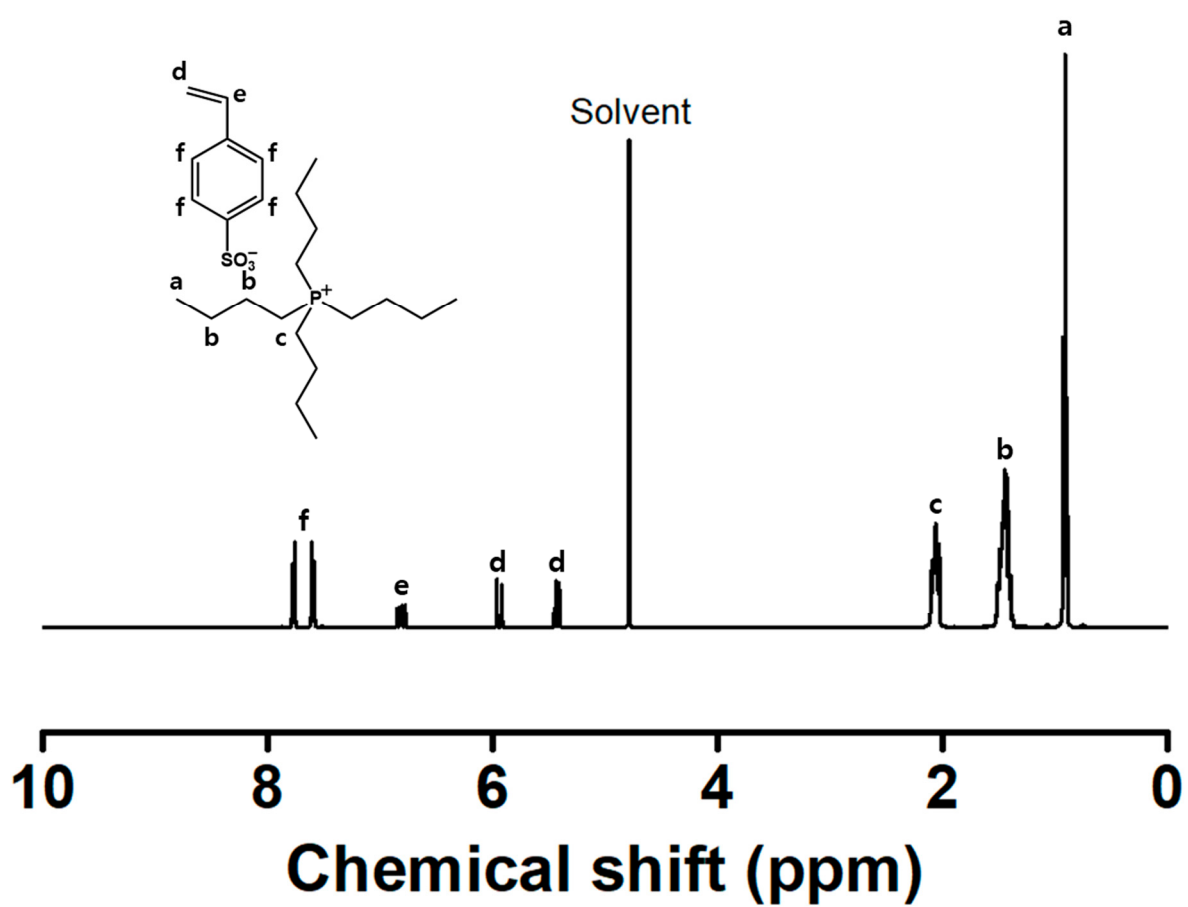


Figure S7. ^1H -NMR spectrum of tetrabutylphosphonium 4-vinylbenzenesulfonate (SSMP).