

Supplementary Information

New Condensation Polymer Precursors Containing Consecutive Silicon Atoms, Decaisopropoxycyclopentasilane and Dodecaethoxyneopentasilane, and their Sol-gel Polymerization

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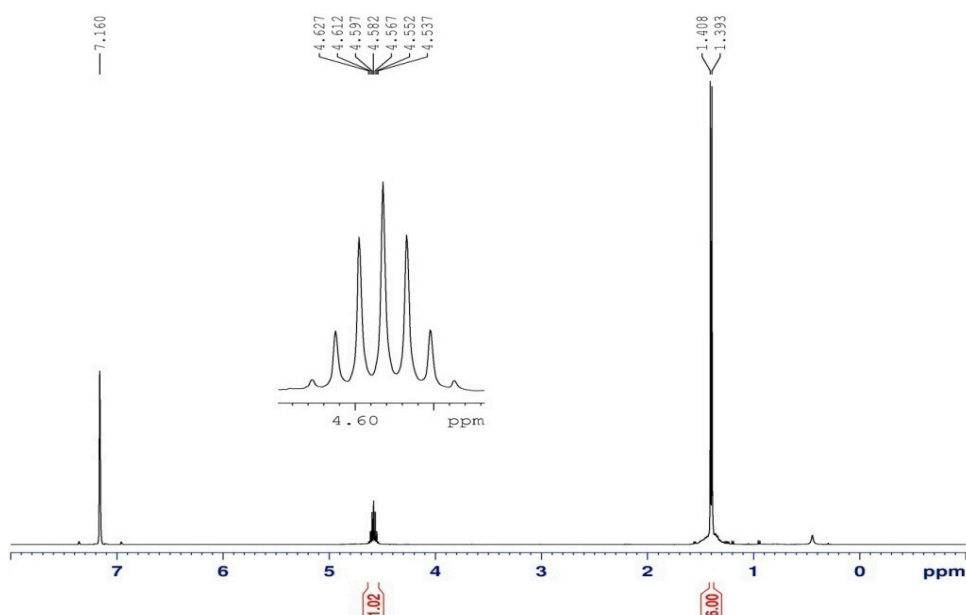


Figure S1. ¹H NMR spectrum of CPS.

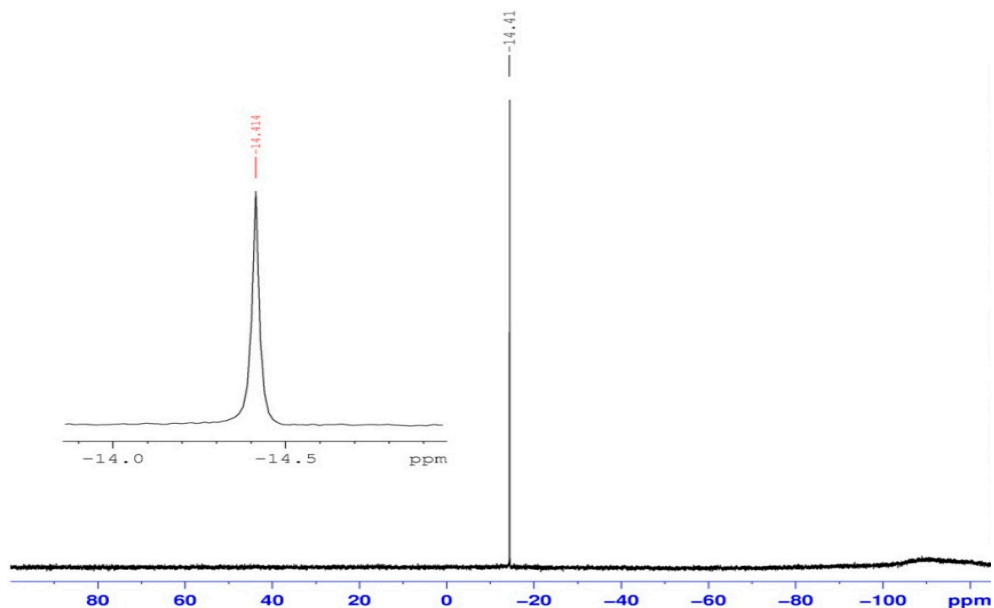


Figure S2. ^{29}Si NMR spectrum of CPS.

[Elemental Composition]

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Data : FAB-C315
 Sample: Dipro
 Note : m-NBA
 Inlet : Direct
 RT : 0.33 min
 Elements : C 100/0, H 150/0, O 10/0, Si 8/3
 Mass Tolerance : 1000ppm, 3mmu if m/z < 3, 5mmu if m/z > 5
 Unsaturation (U.S.) : 0.0 - 100.0

Ion Mode : FAB+
 Scan#: (1,29)

| Observed m/z | Int% | Err[ppm / mmu] | U.S. | Composition |
|--------------|------|----------------|------|---------------------|
| 687.3267 | 40.7 | -4.7 / -3.2 | 24.5 | C 46 H 51 Si 3 |
| | | +4.4 / +3.0 | 6.5 | C 31 H 59 O 9 Si 4 |
| | | -0.2 / -0.1 | 1.5 | C 27 H 63 O 10 Si 5 |
| | | +3.8 / +2.6 | 5.5 | C 30 H 63 O 6 Si 6 |
| | | -0.8 / -0.5 | 0.5 | C 26 H 67 O 7 Si 7 |
| | | +3.2 / +2.2 | 4.5 | C 29 H 67 O 3 Si 8 |

[Theoretical Ion Distribution]

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Molecular Formula : C₂₇H₆₃O₁₀Si₅
 (m/z 687.3268, MW 688.2187, U.S. 1.5)
 Base Peak : 687.3268, Averaged MW : 688.2116(a), 688.2133(w)

| m/z | INT. | |
|----------|----------|-------|
| 687.3268 | 100.0000 | ***** |
| 688.3284 | 55.7284 | ***** |
| 689.3269 | 33.5308 | ***** |
| 690.3275 | 12.0882 | ***** |
| 691.3266 | 4.1137 | ** |
| 692.3268 | 1.0807 | * |
| 693.3263 | 0.2596 | |
| 694.3266 | 0.0525 | |
| 695.3265 | 0.0096 | |
| 696.3270 | 0.0015 | |
| 697.3274 | 0.0002 | |

Figure S3. HRMS result of CPS.

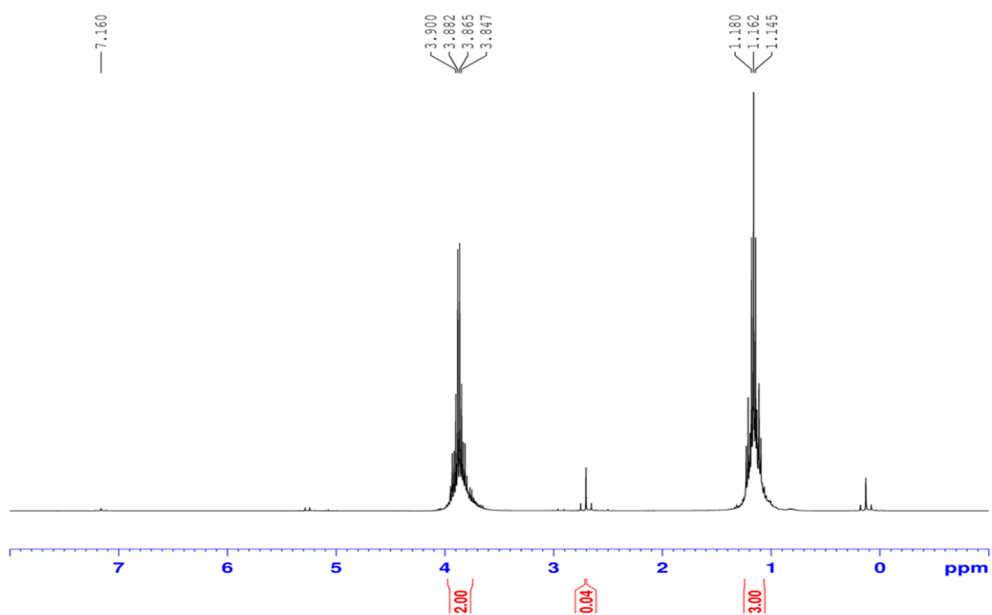


Figure S4. ^1H NMR spectrum of NPS.

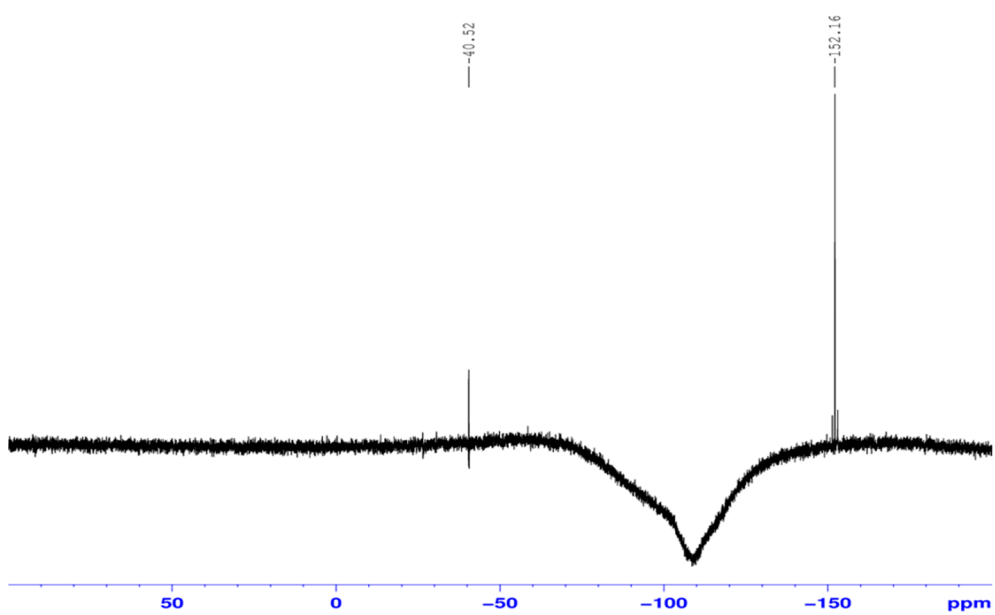


Figure S5. ^{29}Si NMR spectrum of NPS.

[Elemental Composition]
 Data : FAB-H757 Date : 24-Apr-2014 16:50 Page: 1
 Sample: NPSOEt
 Note : m-NBA
 Inlet : Direct Ion Mode : FAB+
 RT : 0.87 min Scan#: (37,39)
 Elements : C 150/0, H 150/0, O 15/10, Si 6/4
 Mass Tolerance : 1000ppm, 3mmu if m/z < 3, 5mmu if m/z > 5
 Unsaturation (U.S.) : -10.0 - 100.0

| Observed m/z | Int% | Err [ppm / mmu] | U.S. | Composition |
|--------------|------|-----------------|------|---------------------|
| 681.3030 | 9.5 | +3.0 / +2.0 | -0.5 | C 24 H 61 O 12 Si 5 |
| | | -1.6 / -1.1 | -5.5 | C 20 H 65 O 13 Si 6 |

[Theoretical Ion Distribution]
 Molecular Formula : C24 H61 O12 Si5 Page: 1
 (m/z 681.3009, MW 682.1686, U.S. -0.5)
 Base Peak : 681.3009, Averaged MW : 682.1614(a), 682.1631(w)

| m/z | INT. |
|----------|----------------|
| 681.3009 | 100.0000 ***** |
| 682.3025 | 52.4679 ***** |
| 683.3009 | 32.1864 ***** |
| 684.3015 | 11.2438 ***** |
| 685.3005 | 3.8707 ** |
| 686.3008 | 0.9992 * |
| 687.3003 | 0.2422 |
| 688.3006 | 0.0486 |
| 689.3006 | 0.0090 |
| 690.3011 | 0.0014 |
| 691.3015 | 0.0002 |

Figure S6. HRMS result of NPS.

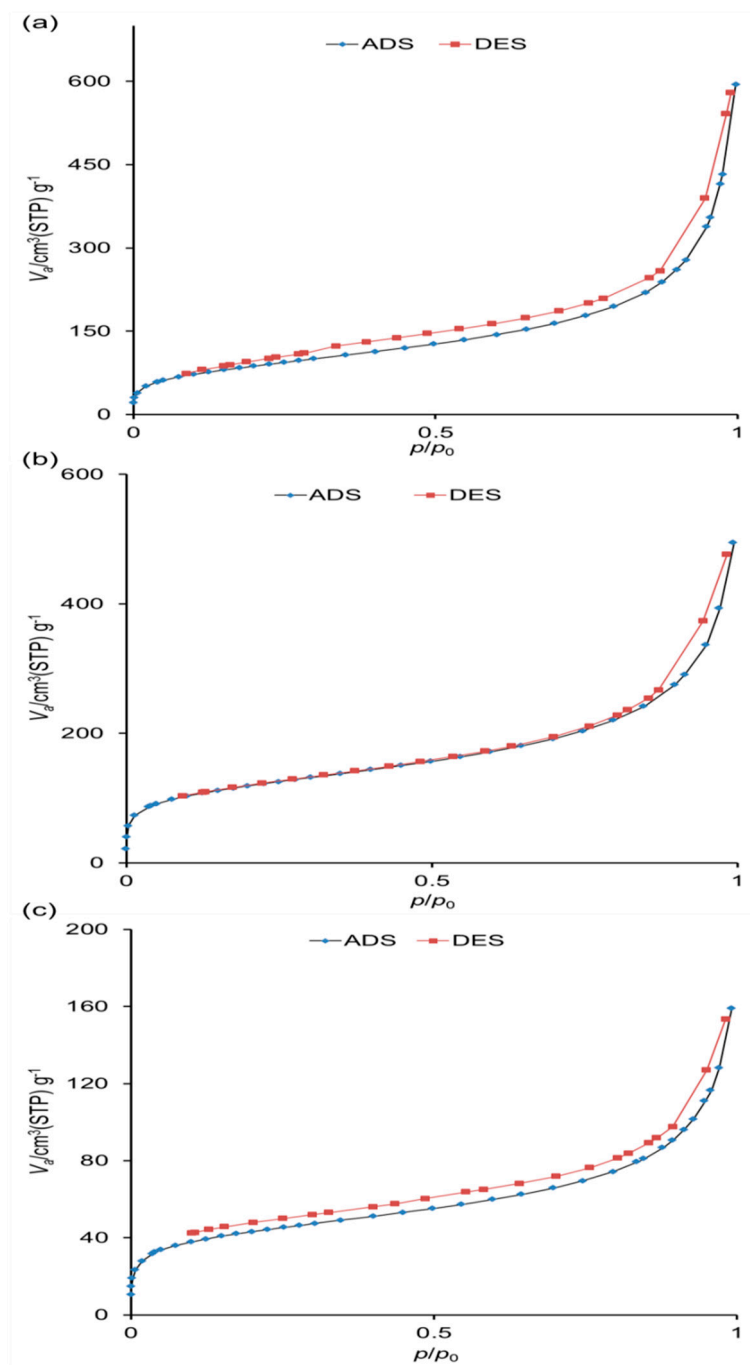


Figure S7. N_2 adsorption-desorption isotherms of the **CPS xerogels**. (a) **CPSH**, (b) **CPSOH**, (c) **CPSN**.

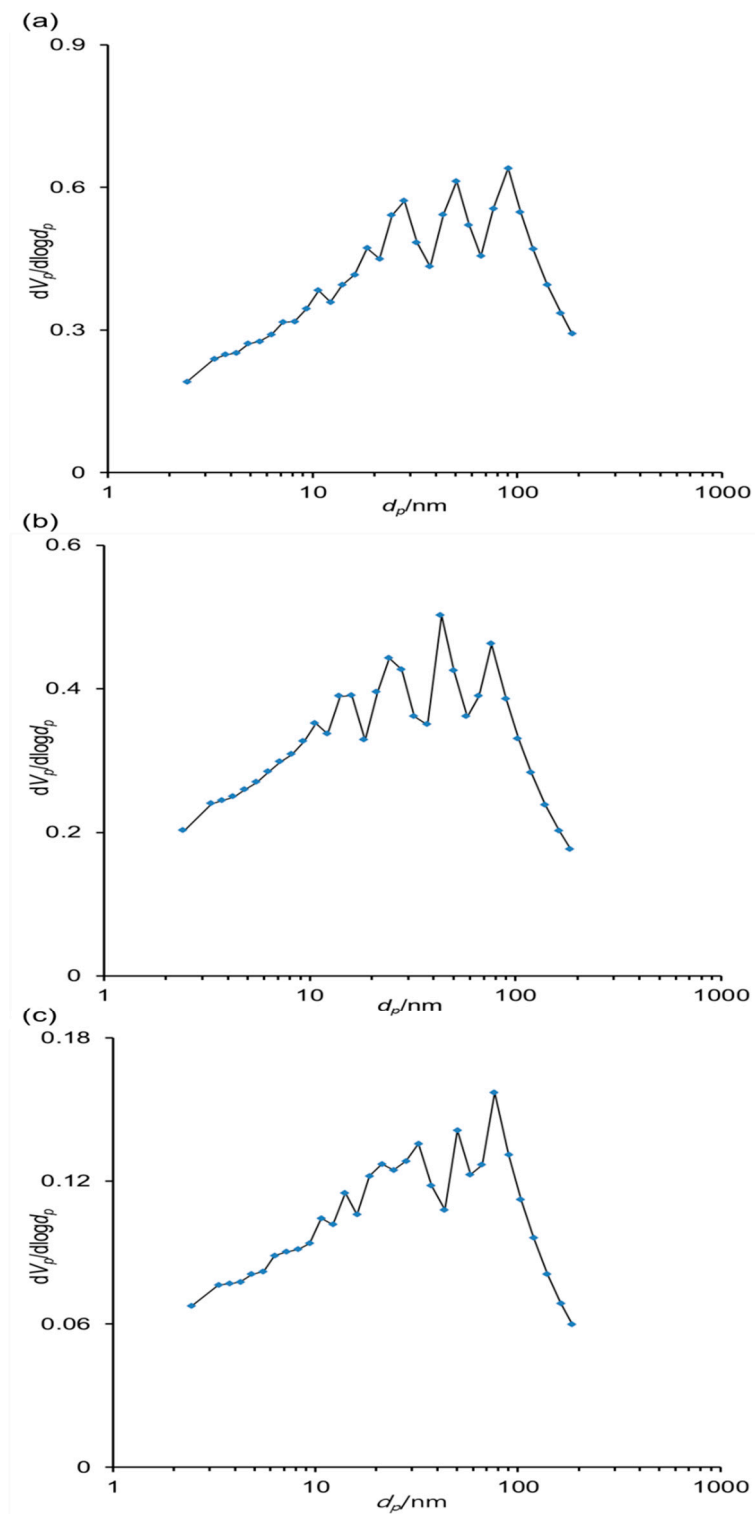


Figure S8. Pore size distribution of the **CPS xerogels**. (a) **CPSH**, (b) **CPSOH**, (c) **CPSN**.