

## Supplementary Information

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

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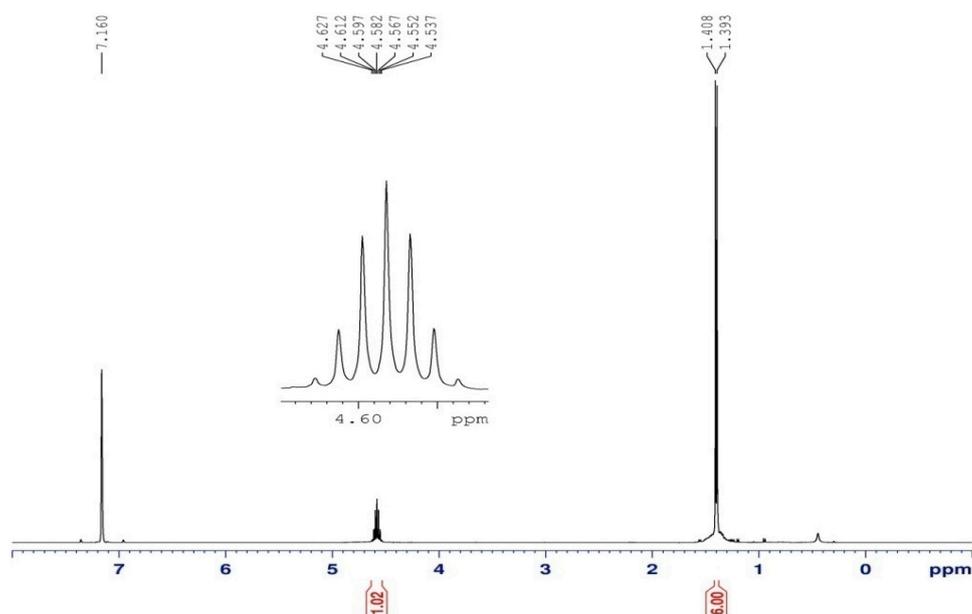


Figure S1. <sup>1</sup>H NMR spectrum of CPS.

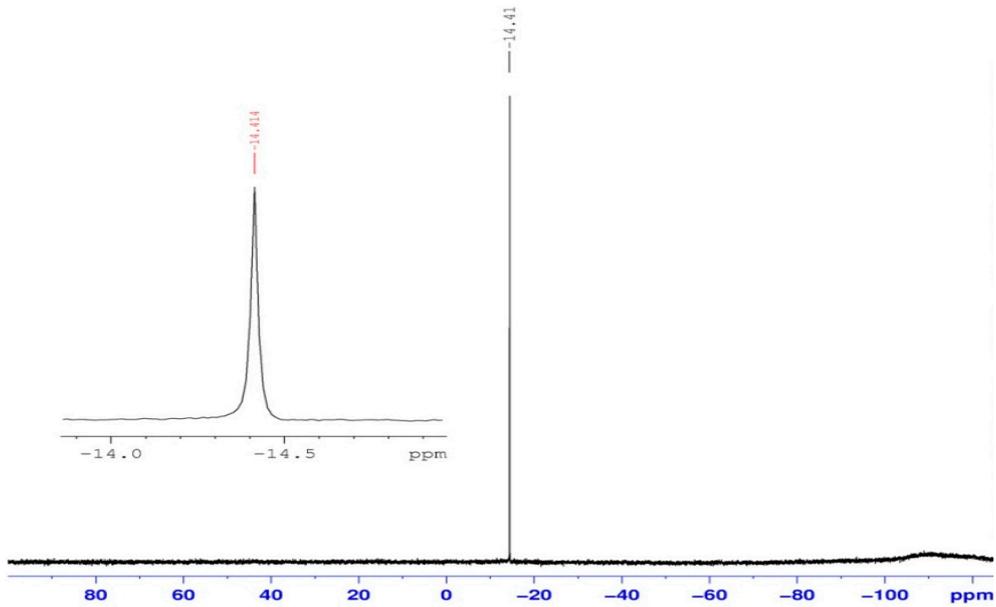


Figure S2.  $^{29}\text{Si}$  NMR spectrum of CPS.

[ 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 : C<sub>27</sub>H<sub>63</sub>O<sub>10</sub>Si<sub>5</sub>  
 (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.

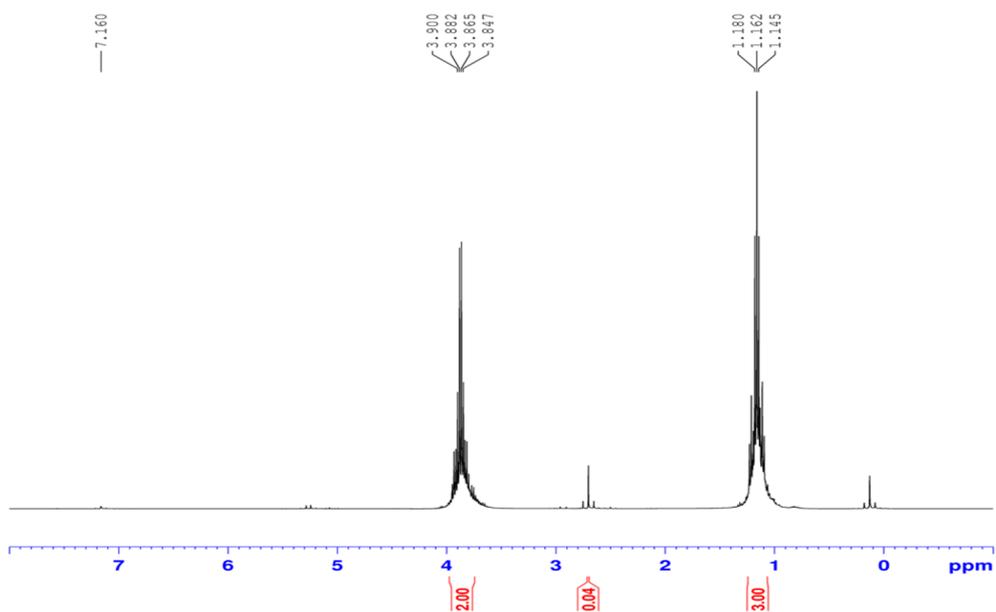


Figure S4.  $^1\text{H}$  NMR spectrum of NPS.

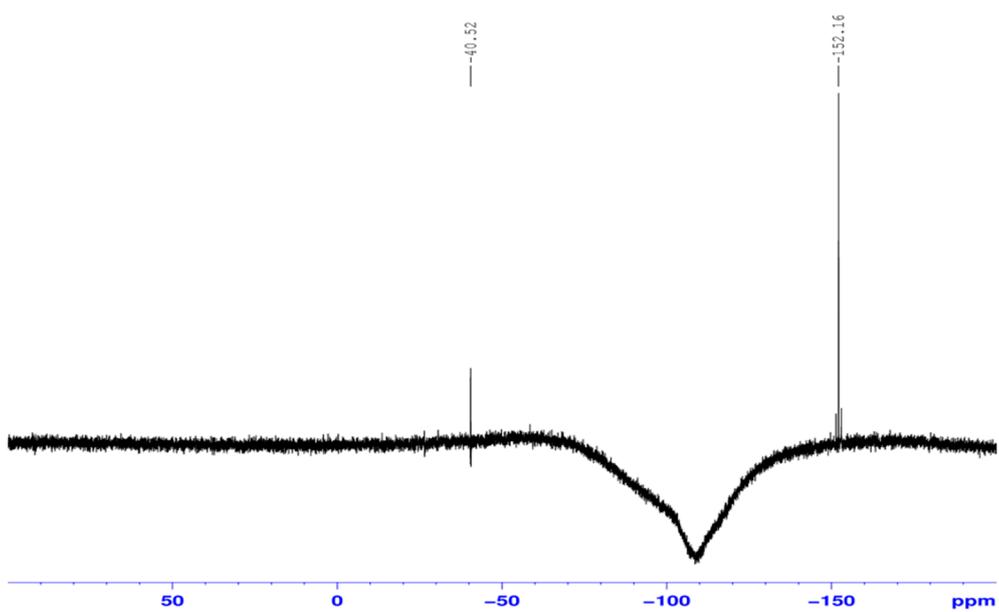


Figure S5.  $^{29}\text{Si}$  NMR spectrum of NPS.

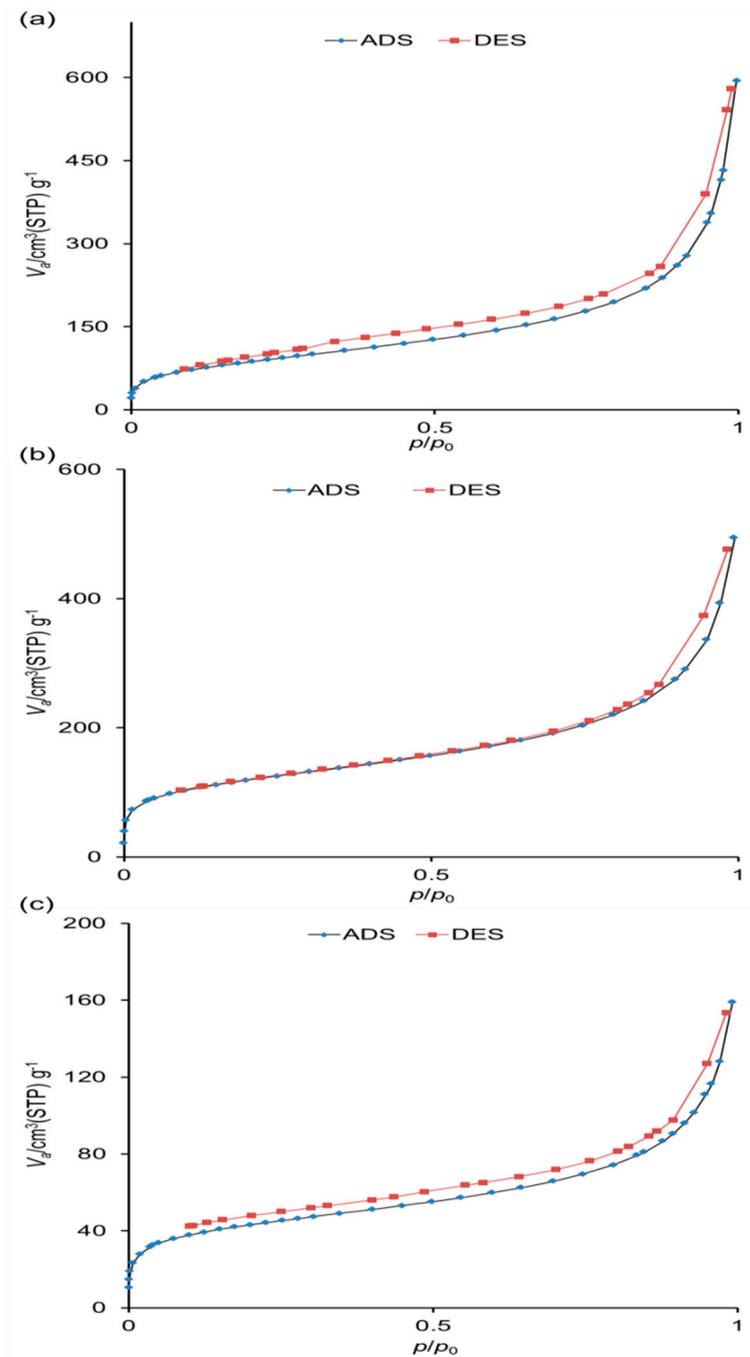
[ Elemental Composition ] Page: 1  
 Data : FAB-H757 Date : 24-Apr-2014 16:50  
 Sample: NPSOEt  
 Note : m-NBA  
 Inlet : Direct Ion Mode : FAB+  
 RT : 0.87 min Scan#: (37,39)  
 Elements : C 150/0, H 150/0, O 15/10, Si 6/4  
 Mass Tolerance : 1000ppm, 3mmu if m/z < 3, 5mmu if m/z > 5  
 Unsaturation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

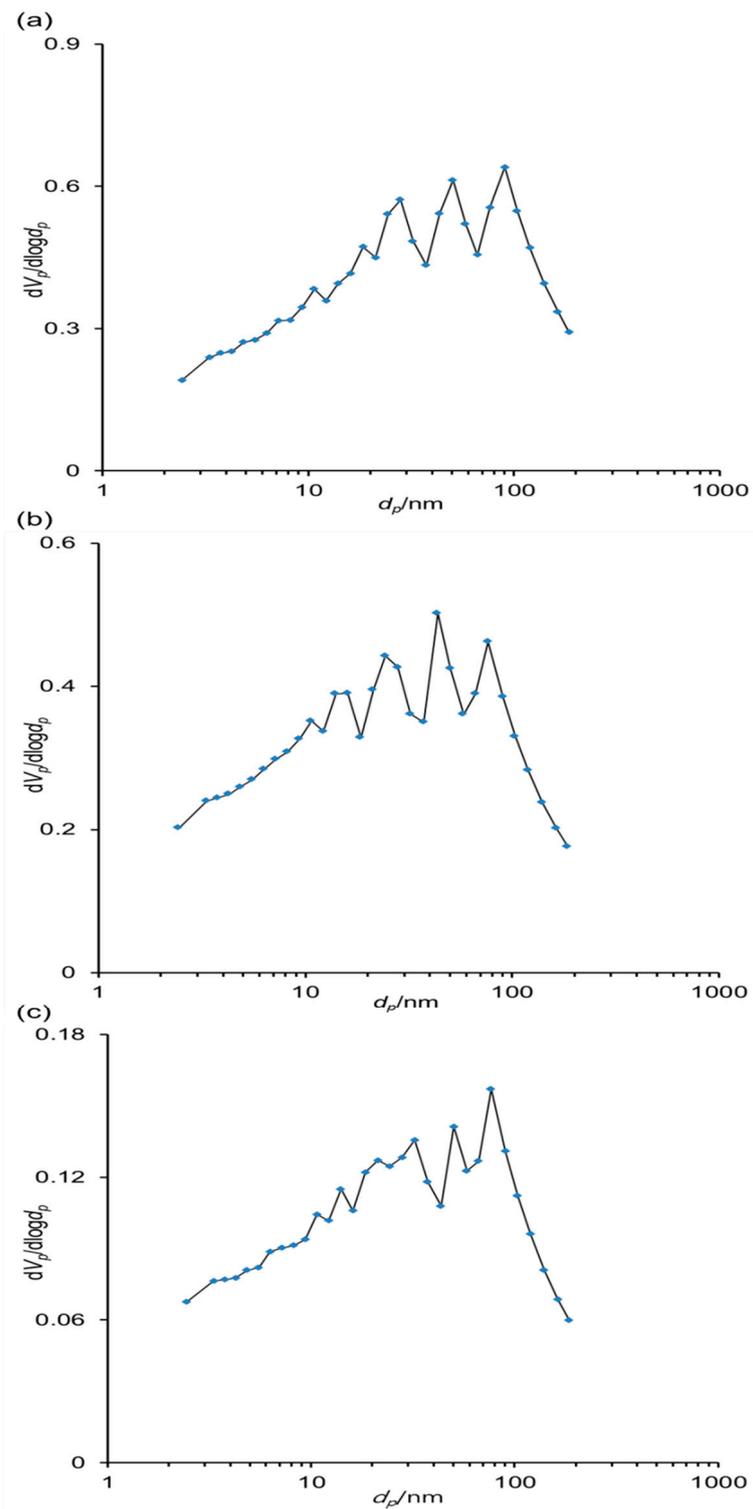
[ Theoretical Ion Distribution ] Page: 1  
 Molecular Formula : C24 H61 O12 Si5  
 (m/z 681.3009, MW 682.1686, U.S. -0.5)  
 Base Peak : 681.3009, Averaged MW : 682.1614(a), 682.1631(w)

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<sub>2</sub> 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**.