Supplementary Information

Engineering Molecular Crystals with Abnormally Weak Cohesion

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Experimental Methods

Hexaphenylbenzenes **1a-c** were prepared and crystallized by methods reported previously.[1] Tetraphenylporphyrin **2a** was prepared according to a published procedure and recrystallized from $CHCl_3/CH_3OH$ before use.[2] Isothermal thermogravimetry was carried out with a TA Instruments Q50 apparatus, using a dynamic atmosphere of N_2 introduced at a rate of 60 mL/min.

[1] J. C. J. Bart, *Acta Crystallogr*. 1968, **B24**, 1277-1287; M. Lutz, A. L. Spek, S. Bonnet, R. J. M. Klein Gebbink and G. van Koten, as communicated in 2006 to the Cambridge Crystallographic Data Centre (CCDC 609800, Refcode: HPHBNZ03) ; E. Gagnon, S. D. Halperin, V. Métivaud, K. E. Maly and J. D. Wuest, *J. Org. Chem.* 2010, **75**, 399-406.

[2] A. D. Adler, F. R. Longo, J. D. Finarelli, J. Goldmacher, J. Assour and L. Korsakoff, *J. Org. Chem.* 1967, **32**, 476.

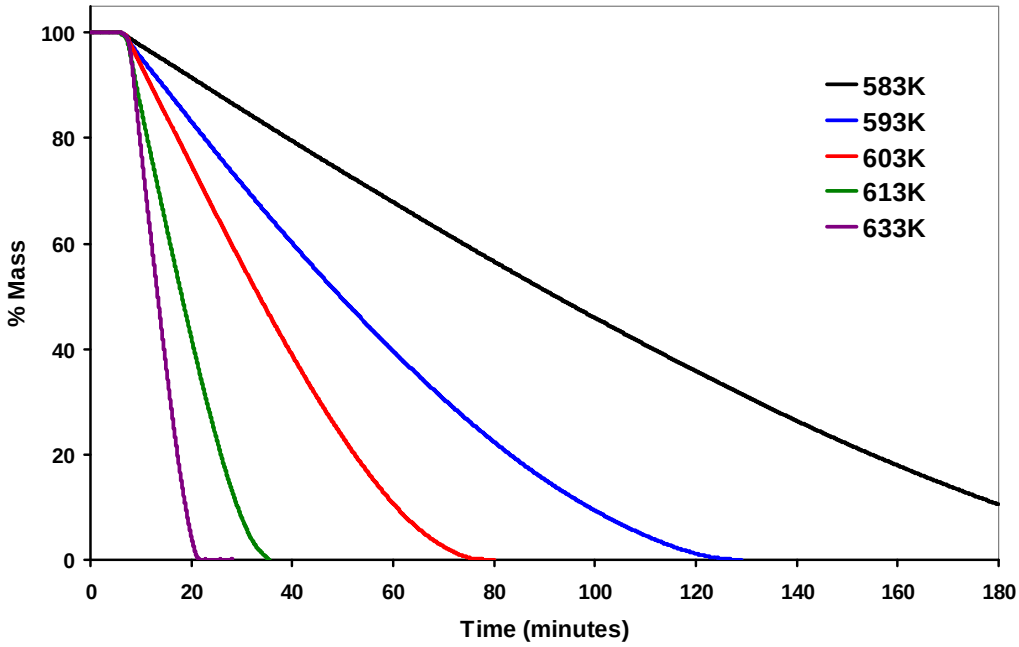

Figure S1. Representative thermogravimetric plots showing the rate of sublimation of hexaphenylbenzene **1a** at different temperatures.

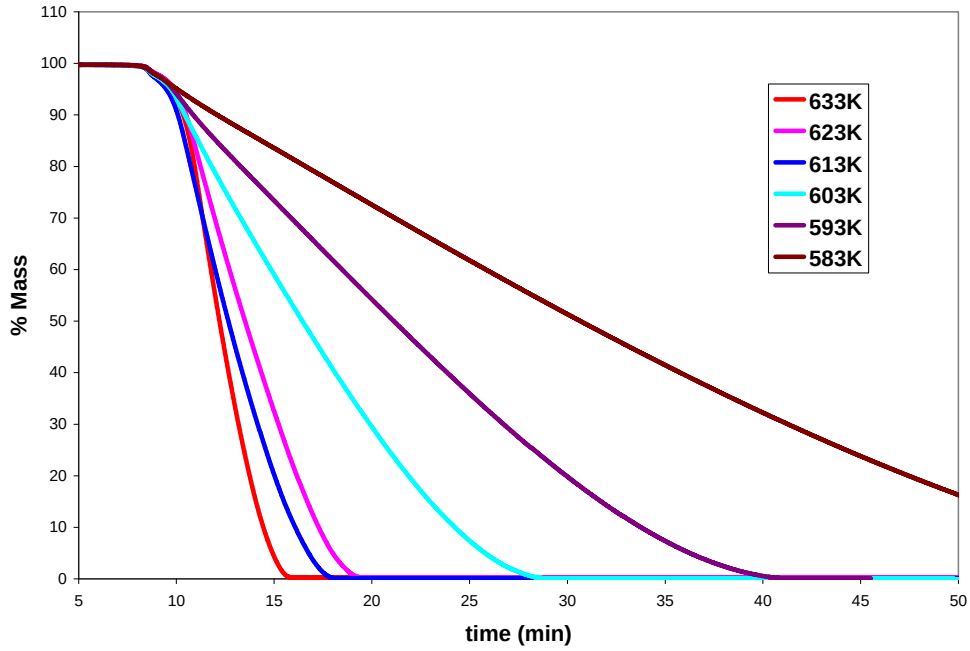

Figure S2. Representative thermogravimetric plots showing the rate of sublimation of hexaphenylbenzene **1b** at different temperatures.

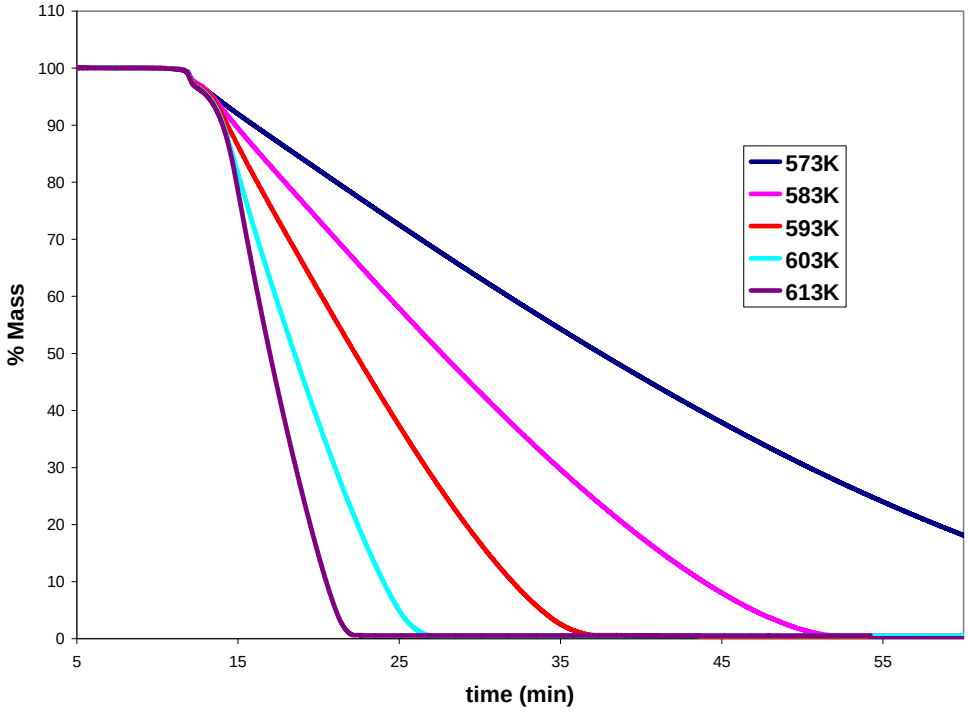

Figure S3. Representative thermogravimetric plots showing the rate of sublimation of hexaphenylbenzene **1c** at different temperatures.

Table S1. Rates of Sublimation of Hexaphenylbenzenes **1a-c** at Different Temperatures.

	Rates of Sublimation (mg/min)		
Temperature (K)	**1a**	**1b**	**1c**
573	0.0502	0.1115	0.2698
583	0.0987	0.2184	0.4474
593	0.1603	0.3588	0.7157
603	0.2997	0.5533	1.0083
613	0.4348	0.8293	1.7029
623	0.7373	1.141	2.3236
633[a]	1.0498	-	-
643[a]	1.4961	-	-

[a]Rates for compounds **1b-c** were too high at these temperatures to be measured reliably.

Table S2. Vapor Pressure and Rate of Sublimation for Tetraphenylporphyrin **2a** at Different Temperatures.

Temperature (K)	Vapor Pressure (10^2 Pa)[a]	*dm/dt* (mg/min)
593	4.35	0.0004818
603	10.8	0.0008556
613	28.3	0.00138
623	59.3	0.00248
633	138	0.00482
643	222	0.00769
653	361	0.01417

[a]Vapor pressure data obtained from: G. L. Perlovich, O. A. Golubchikov and M. E. Klueva, *J. Porphyrins Phthalocyanines* 2000, **4**, 699-706.

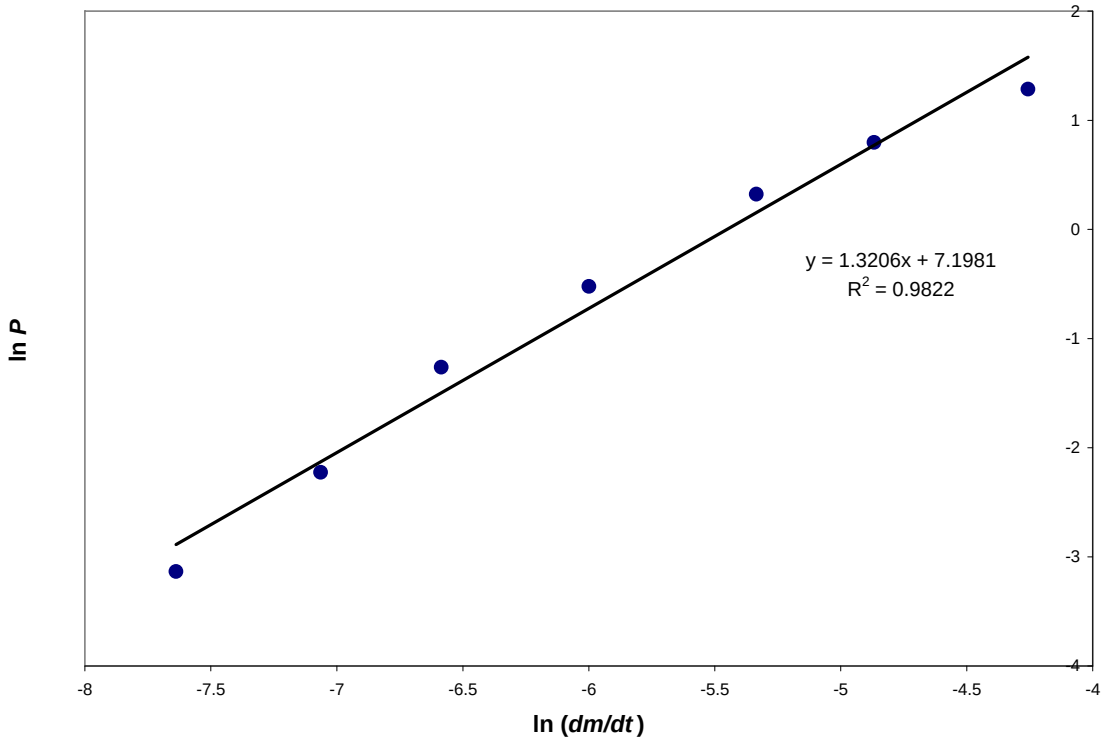

Figure S4. Plot of ln *P* versus ln (*dm/dt*) for tetraphenylporphyrin **2a**.

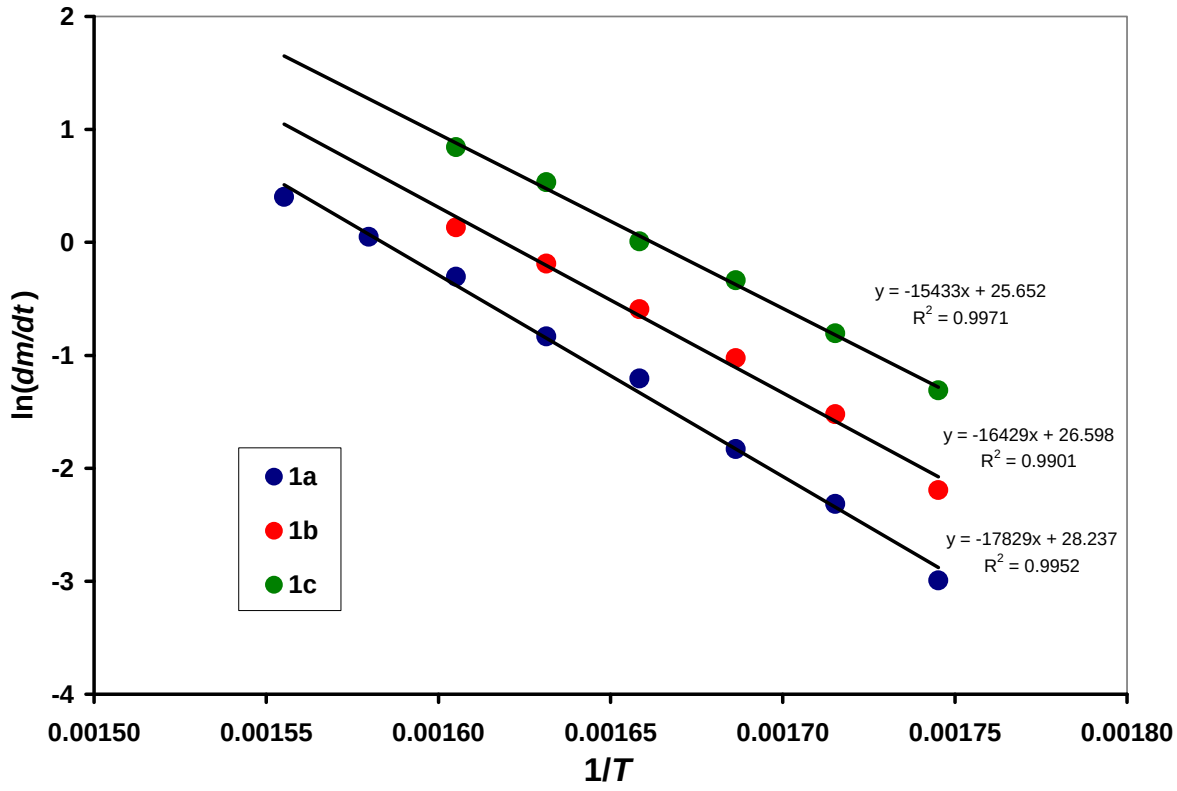

Figure S5. Arrhenius plots of the rates of sublimation versus 1/*T* for hexaphenylbenzenes **1a-c**.