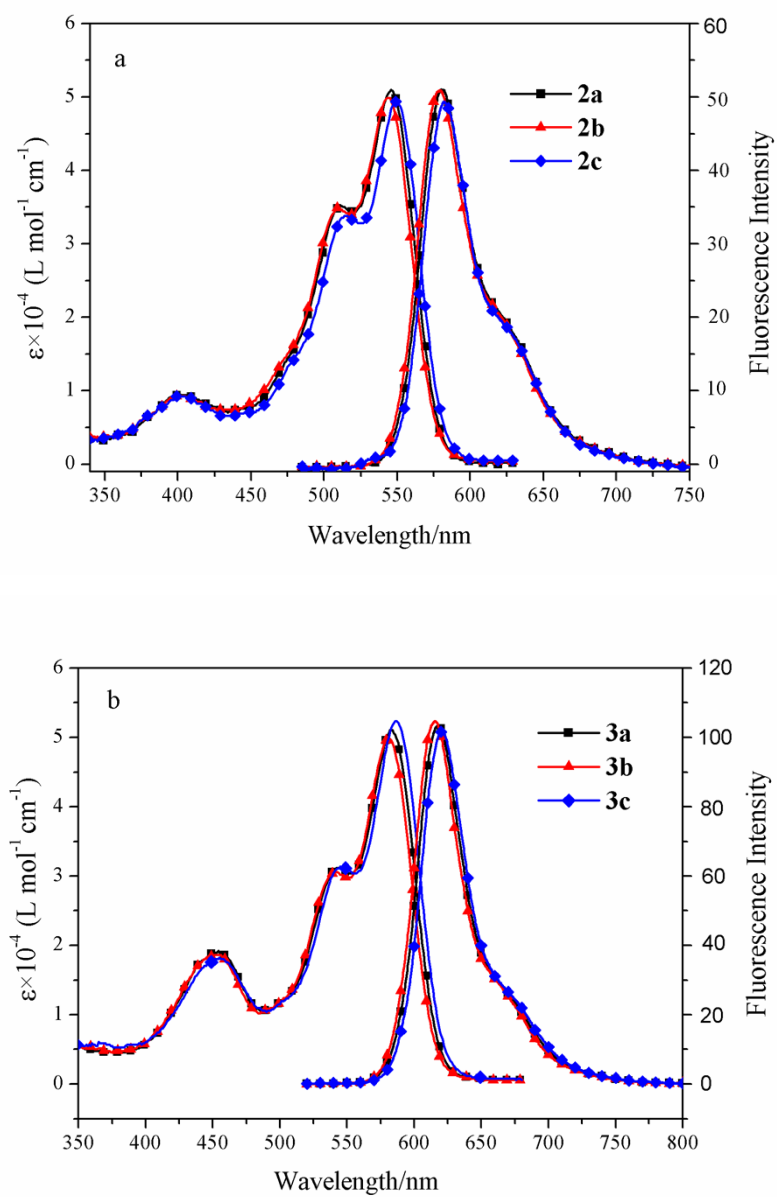


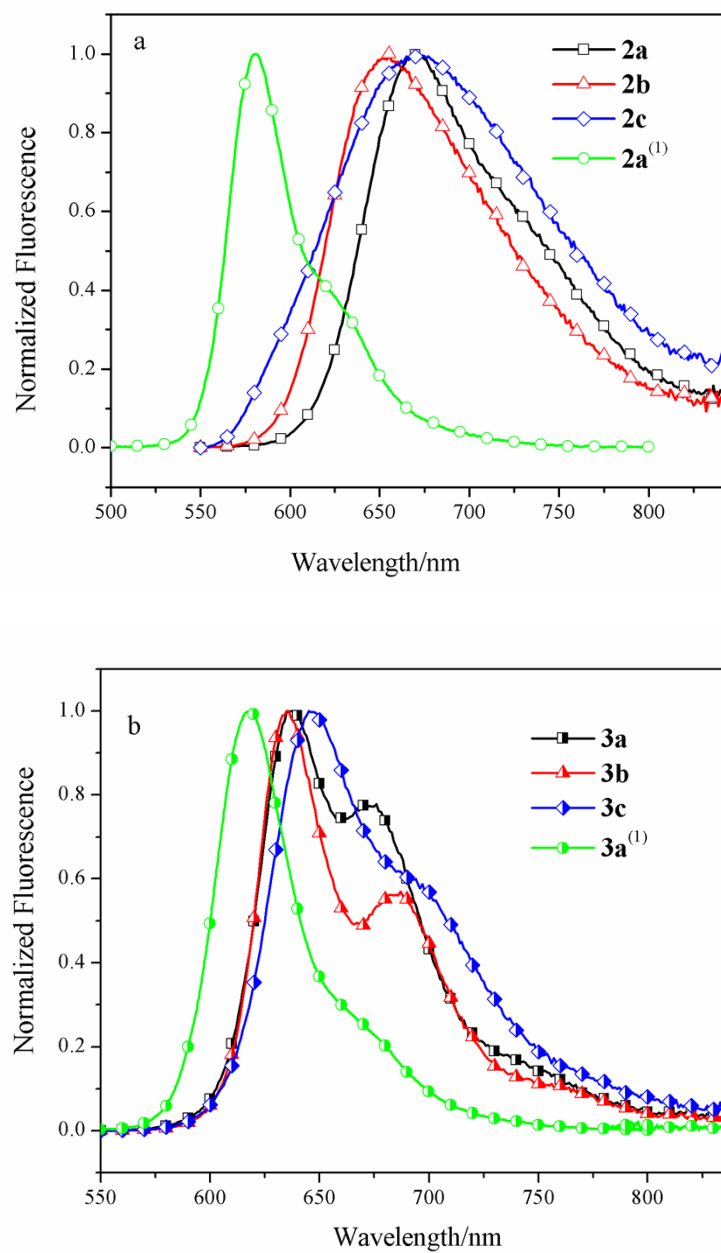
**Electronic Supplementary Information (ESI) for**

**Synthesis and Aggregation Properties of A Series of Dumbbell  
Polyhedral-Oligosilsesquioxane-Perylene Diimide Triad**

**Ying Zhang, Liangliang Zhang, Heyuan Liu, Di Sun, and Xiyou Li\***

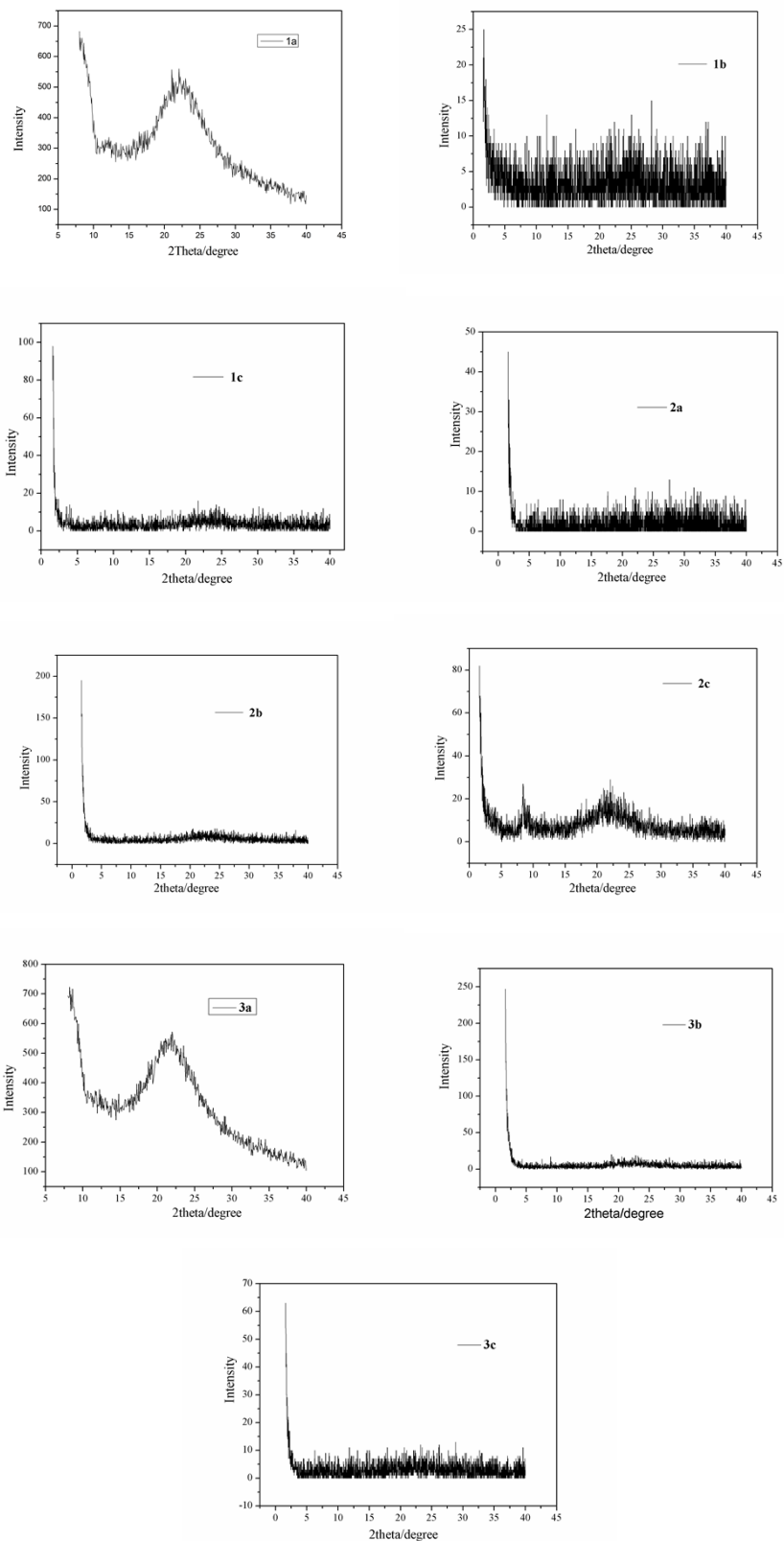


**Fig. S1** UV-vis absorption (left) and fluorescence (right) spectra of **2a-c** (a) and **3a-c** (b) in chloroform ( $5.0 \times 10^{-6} \text{M}$ ) at room temperature.



**Fig. S2** Normalized Fluorescence spectra of thin films of **2a-c** (a) and **3a-c** (b).

(1): With monomeric **3a** ( $5.0 \times 10^{-6} \text{M}$ ) as reference.



**Fig. S3** The X-ray diffraction patterns of thin film of compound **1a-c**, **2a-c** and **3a-c** on quartz glass substrate

## Single Crystal X-ray Analysis

**Table 1** Crystal data and structure refinements for **1b**, **3b** and **3c**.

Compound	<b>1b</b>	<b>3b</b>	<b>3c</b>
Formula	$C_{86}H_{146}N_2O_{28}Si_{16}$	$C_{132}H_{190}N_2O_{32}Si_{16} \cdot 2CHCl_3$	$C_{132}H_{190}N_2O_{32}Si_{16} \cdot 3CHCl_3$
Formula Mass	2105.49	2937.00	3124.40
Crystal group	triclinic	triclinic	triclinic
Space group	<i>p</i> -1	<i>p</i> -1	<i>p</i> -1
<i>a</i> [Å]	11.3824(2)	10.975(4)	15.310(8)
<i>b</i> [Å]	21.8344(4)	21.227(7)	15.323(9)
<i>c</i> [Å]	23.7734(5)	34.042(10)	37.78(2)
$\alpha$ [°]	86.5313(16)	87.099(7)	100.751(10)
$\beta$ [°]	81.6042(18)	82.157(6)	95.049(11)
$\gamma$ [°]	83.2088(17)	83.536(6)	102.622(10)
<i>V</i> [Å <sup>3</sup> ]	5798.4(2)	7802(4)	8420(8)
<i>Z</i>	2	2	2
$\rho$ (calc) (g/cm <sup>3</sup> )	1.206	1.250	1.232
Temperature (K)	293	196	190
$\lambda$ (Å)	1.5418	0.71073	0.71073
<i>F</i> (000)	2700	3120	3300
$\mu$ (mm <sup>-1</sup> )	2.215	0.300	0.328
<i>R</i> <sub>int</sub>	0.1186	0.1484	0.1417
Reflections collected	60760	38909	41600
Independent reflns	21454	27089	29191
Data/restraints/parameters	21454/608/1109	27089/885/1641	29191/837/1516
Final <i>R</i> indexes [ <i>I</i> > 2 $\sigma$ ( <i>I</i> )]	<i>R</i> <sub>1</sub> =0.2148, <i>wR</i> <sub>2</sub> =0.5006	<i>R</i> <sub>1</sub> =0.1564, <i>wR</i> <sub>2</sub> =0.3681	<i>R</i> <sub>1</sub> =0.1858, <i>wR</i> <sub>2</sub> =0.4245
Final <i>R</i> indexes [all data]	<i>R</i> <sub>1</sub> =0.3009, <i>wR</i> <sub>2</sub> =0.5282	<i>R</i> <sub>1</sub> =0.4307, <i>wR</i> <sub>2</sub> =0.4660	<i>R</i> <sub>1</sub> =0.4064, <i>wR</i> <sub>2</sub> =0.5002
GOF on <i>F</i> <sup>2</sup>	1.159	0.778	0.864