## Supporting Information for:

Synthesis of star-shaped monodisperse oligo(9,9-di-n-octylfluorene-2,7-vinylene)s functionalized truxenes with two-photon absorption properties

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**Fig. S1** Cyclic voltammetry diagrams of **Tr-OFVn** in anhydrous  $CH_2Cl_2$  with 0.1 M  $Bu_4NBF_4$  as electrolyte at a scan rate of 100 mV·s<sup>-1</sup>.



Fig. S2 Normalized UV-vis absorption (a) and fluorescence (b,  $\lambda_{ex} = 390$  nm) spectra of **Tr-OFV3** in THF (2.0 × 10<sup>-6</sup> M), in spin-coated film and in the thermally annealed film; UV-vis absorption (c) and fluorescence spectra (d,  $\lambda_{ex} = 365$  nm) of **Tr-OFVn** in the themally annealed films.



Fig. S3 Two-photon-induced fluorescence spectra ( $\lambda_{ex} = 710$  nm) of Tr-OFVn in toluene ( $5.0 \times 10^{-5}$  M).



Fig. S4 Normalized one-photon absorption (black), single-photon excitation fluorescence spectra (blue,  $\lambda_{ex}$ = 365 nm) and two-photon excitation spectra (red) for **Tr-OFV1** (a), **Tr-OFV2** (b) and **Tr-OFV4** (c) in toluene (5.0 × 10<sup>-5</sup> M). The two-photon spectra are plotted against  $\lambda/2$  (twice the photon energy).



**Fig. S5** (a) The two-photon excitation spectra of **E-OFVn** (n = 2, 3, 4) in toluene (1.5  $\times$  10<sup>-4</sup> M); (b) The two-photon excitation spectra of **E-OFV4** (1.5  $\times$  10<sup>-4</sup> M) and **Tr-OFV4** (5.0  $\times$  10<sup>-5</sup> M) in toluene. The max two-photon cross sections were 260 GM, 215 GM and 597 GM for **E-OFV2**, **E-OFV3** and **E-OFV4**, respectively.

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**Fig. S6** <sup>1</sup>H-NMR (500 MHz) spectrum of compound **E-OFV1**.



Fig. S7 MALDI/TOF MS spectrum of E-OPV1.

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Fig. S8  $^{1}$ H-NMR (500 MHz) spectrum of compound 4.



Fig. S9 MALDI/TOF MS spectrum of compound 4.

₹5.83 ₹5.79 **T5.27** 5.25  $\int_{-1.05}^{1.10}$ -7000 01 99 64 ci. Ŷ -6500 -6000 -5500 -5000 -4500 C<sub>8</sub>H<sub>17</sub>,C<sub>8</sub>H<sub>17</sub> -4000 -3500 C<sub>8</sub>H<sub>17</sub>C<sub>8</sub>H<sub>17</sub> -3000 -2500 -2000 -1500 -1000 -500 -0 92 86 8 8 g 633 N 4.0 f1 (ppm) 2.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 3.5 3.0 2.0 1.5 1.0 0.5 0.0

Fig. S10  $^{1}$ H-NMR (500 MHz) spectrum of compound E-OFV2.



Fig. S11 MALDI/TOF MS spectrum of E-OFV2.

90 22.558.288388 28 23 33 33 33 800333338 10 230 80 24 280 280 280 280 -220 -10. KKKKKK 0 -210 ÷ -200 -190 -180 -170 -160 1.1.1 1 -150 C<sub>8</sub>H<sub>17</sub>, C<sub>8</sub>H<sub>17</sub> -140 -130 СНО -120 -110 C<sub>8</sub>H<sub>17</sub>C<sub>8</sub>H<sub>17</sub> C<sub>8</sub>H<sub>17</sub>C<sub>8</sub>H<sub>17</sub> -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 -0 97 --10 00 9.5 5.5 4.5 fl (ppm) 3.5 2.5 6.5 8.5 7.5 1.5 0.5

**Fig. S12** <sup>1</sup>H-NMR (500 MHz) spectrum of compound **5**.



Fig. S13 MALDI/TOF MS spectrum of 5.

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Fig. S14  $^{1}$ H-NMR (500 MHz) spectrum of compound E-OFV3.



Fig. S15 MALDI/TOF MS spectrum of E-OFV3.

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**Fig. S16**  $^{1}$ H-NMR (500 MHz) spectrum of compound **6**.



Fig. S17 MALDI/TOF MS spectrum of 6.

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Fig. S18 <sup>1</sup>H-NMR (500 MHz) spectrum of compound E-OFV4.



Fig. S19 MALDI/TOF MS spectrum of E-OFV4.

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**Fig. S20**  $^{1}$ H-NMR (500 MHz) spectra of compound **8**.



Fig. S21 MALDI/TOF MS spectrum of compound 8.

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Fig. S22 <sup>1</sup>H-NMR (500 MHz) spectrum of compound 9.

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Fig. S23 <sup>1</sup>H-NMR (500 MHz) spectra of Tr-OFV1.



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Fig. S24  $^{13}$ C NMR (125 MHz) spectrum of Tr-OFV1.



Fig. S25 MALDI/TOF MS spectrum of Tr-OFV1.

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**Fig. S26** <sup>1</sup>H-NMR (500 MHz) spectrum of **Tr-OFV2**.





Fig. S27 <sup>13</sup>C-NMR (125 MHz) spectrum of Tr-OFV2.



Fig. S28 MALDI/TOF MS spectrum of Tr-OFV2.

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**Fig. S29** <sup>1</sup>H-NMR (500 MHz) spectra of **Tr-OFV3**.



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Fig. S30 <sup>13</sup>C-NMR (125 MHz) spectrum of Tr-OFV3.





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Fig. S32 <sup>1</sup>H-NMR (500 MHz) spectra of Tr-OFV4.



Fig. S33 <sup>13</sup>C-NMR (125 MHz) spectrum of compound Tr-OFV4.



Fig. S34 MALDI/TOF MS spectrum of Tr-OFV4.