

Supplementary Information

Synthesis, characterization and comparative behaviour of thiophene-benzothiadiazole based donor-acceptor-donor (D-A-D) oligomers

Prashant Sonar^{1*}, Samarendra P. Singh^{1*}, Philippe Leclère², Roberto Lazzaroni², Ting
Ting Lin¹, Ananth Dodabalapur^{1,3} and Alan Sellinger^{1,4}

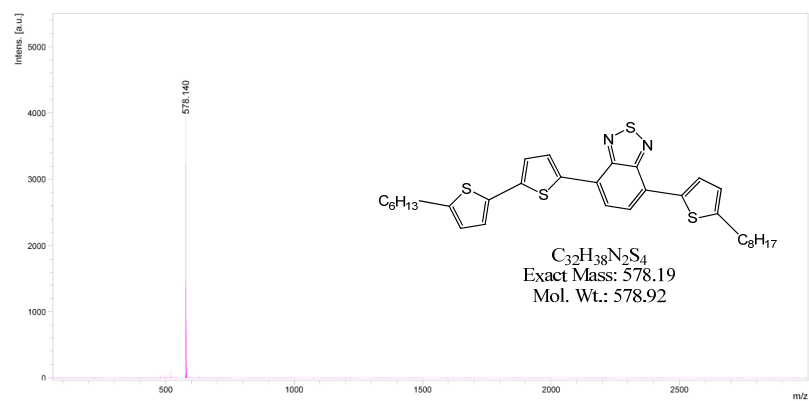
*1. Institute of Materials Research and Engineering (IMRE), and the Agency for Science, Technology and Research (A*STAR), 3 Research Link, Singapore 117602, Republic of Singapore.*

2. Université de Mons-Hainaut, Service de Chimie des Matériaux Nouveaux, Place du Parc 20, B-7000 Mons, Belgium.

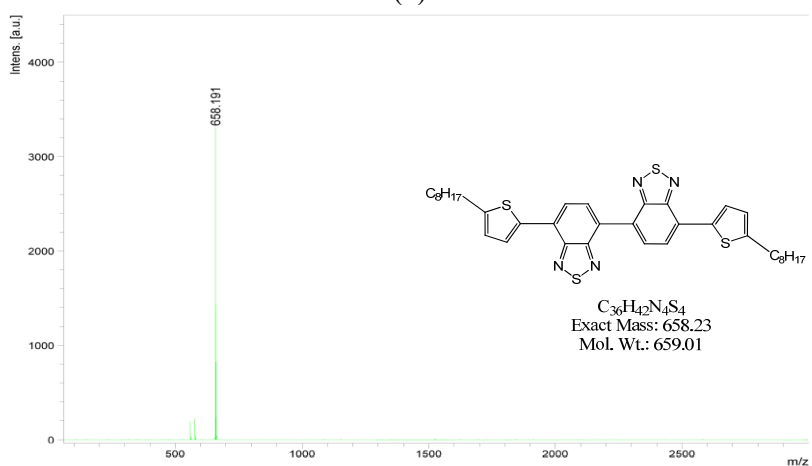
3. Microelectronics Research Center, University of Texas at Austin, Austin, TX, 78758, USA.

4. Current address: Department of Materials Science and Engineering and the Center for Advanced Molecular Photovoltaics (CAMP), Geballe Laboratory for Advanced Materials, 476 Lomita Mall, Stanford University, Stanford, CA 94305-4045, USA

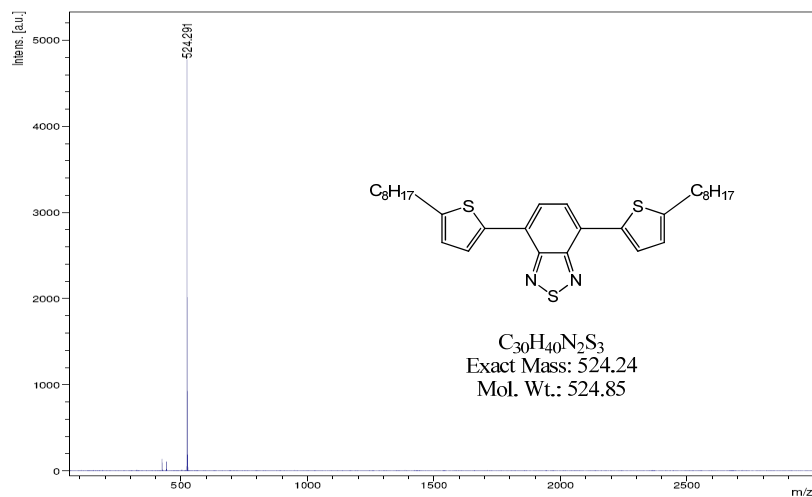
E-mail: sonarp@imre.a-star.edu.sg, samar-singh@imre.a-star.edu.sg



(a)



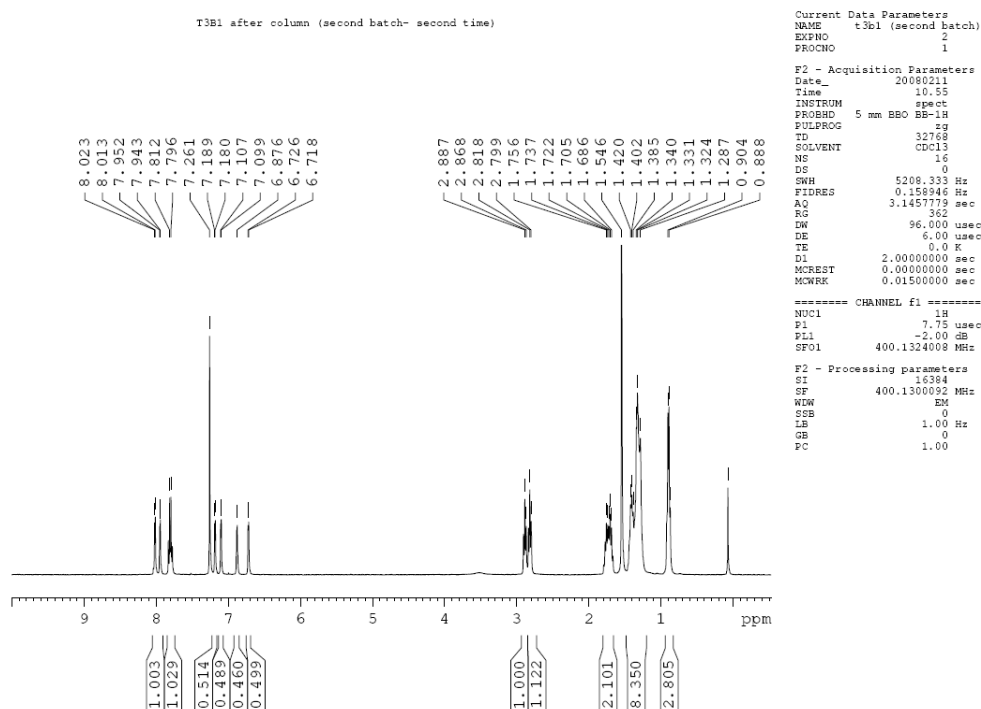
(b)



(c)

Fig. S1. MALDI-TOF Spectra of (a) **3T1B** (b) **2T2B** and (c) **2T1B** materials.

(a)



(b)

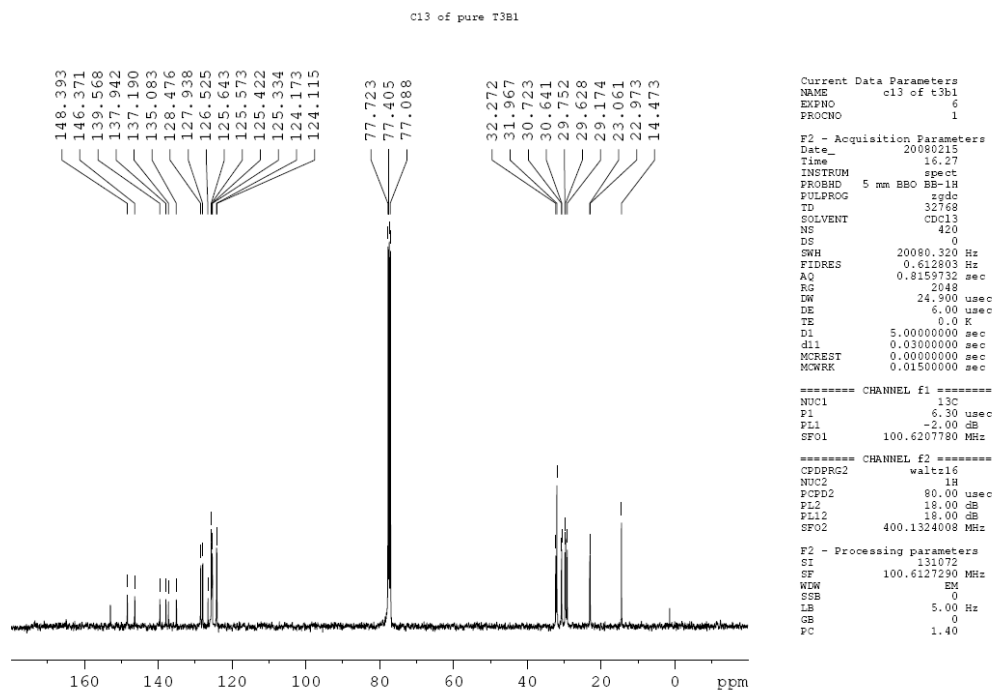
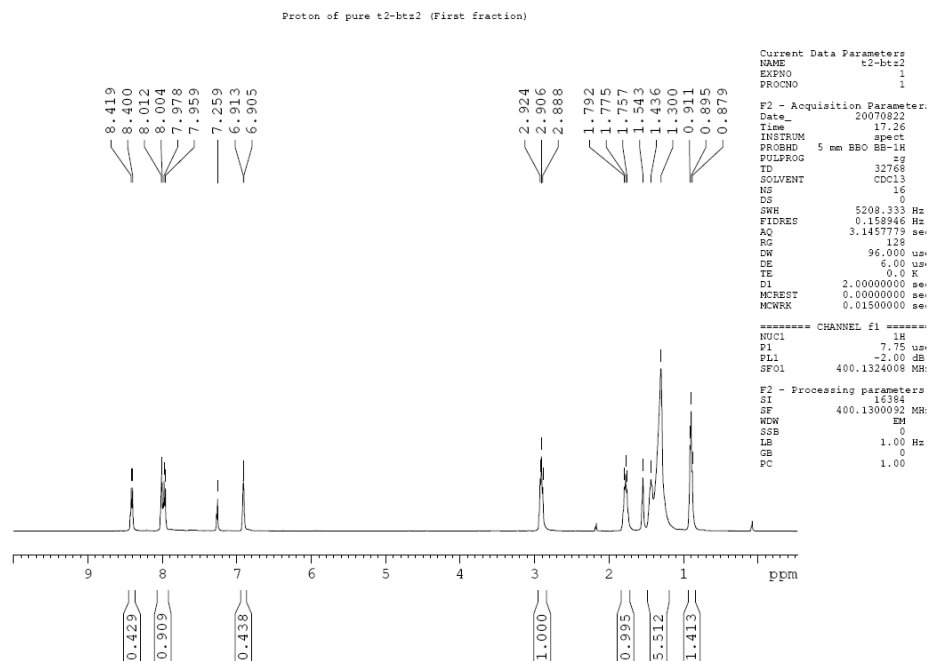


Fig. S2. ^1H (a) and ^{13}C (b) NMR spectra of **3T1B**

(a)



(b)

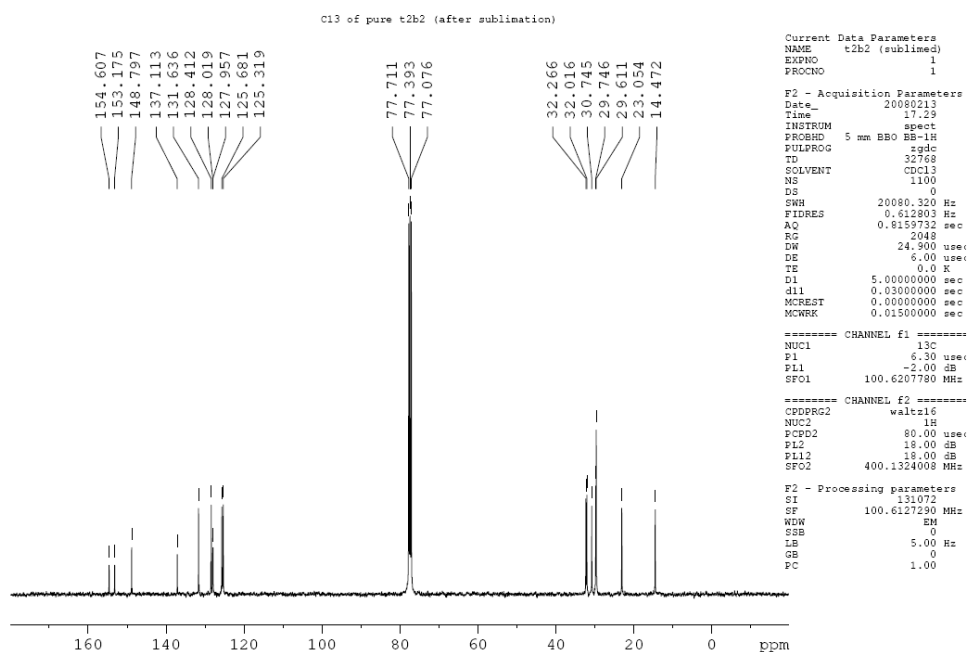
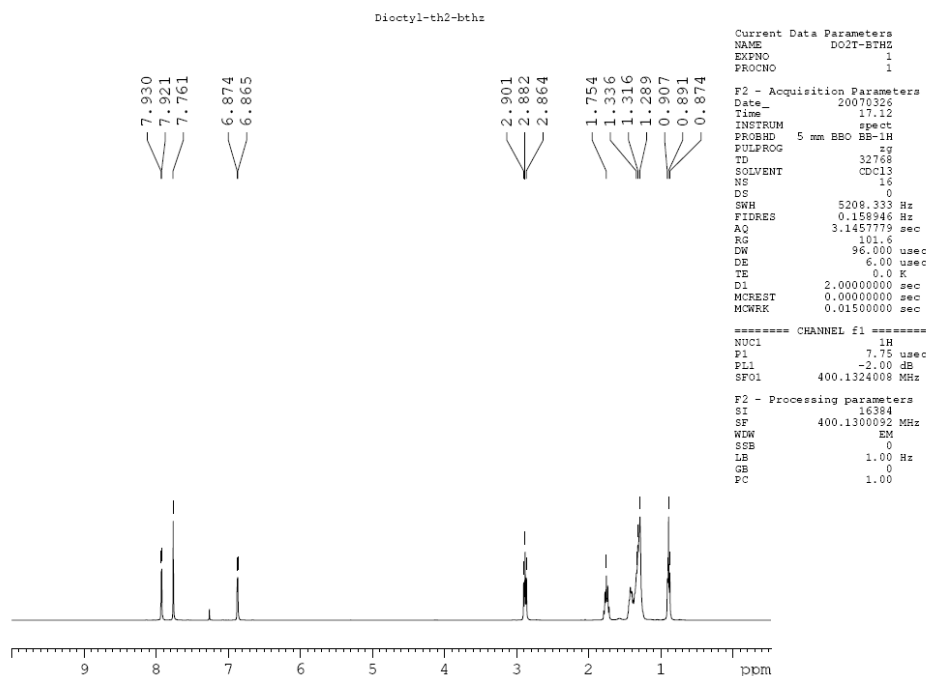


Fig. S3. ^1H (a) and ^{13}C (b) NMR spectra of 2T2B

(a)



(b)

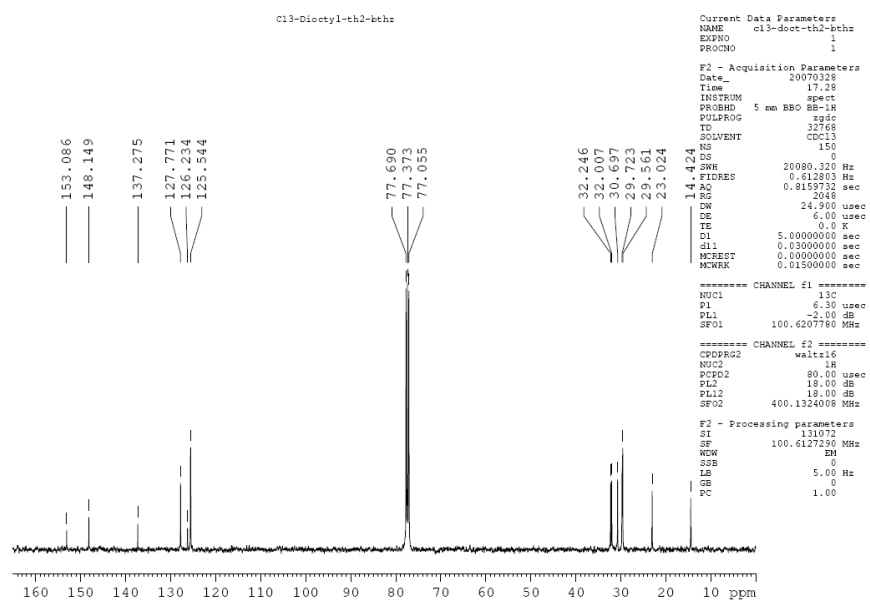
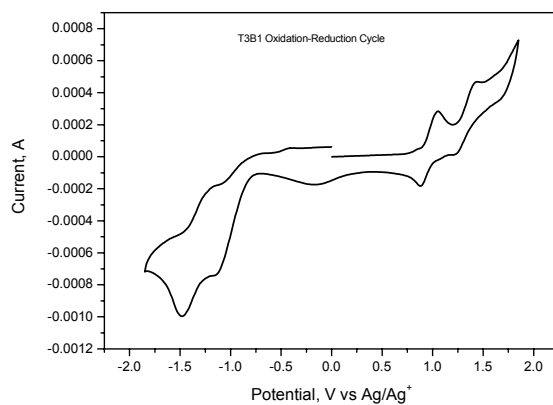
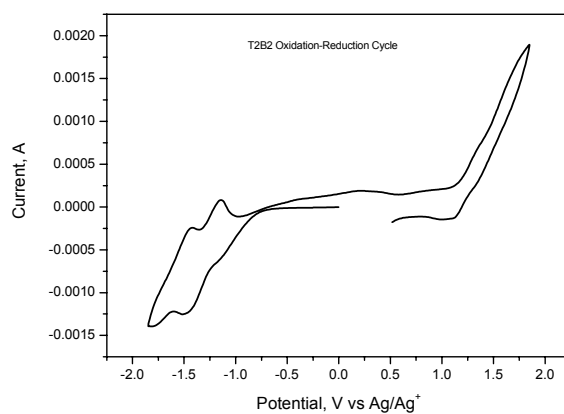


Fig. S4. ^1H (a) and ^{13}C (b) NMR spectra of 2T1B

(a)



(b)



(c)

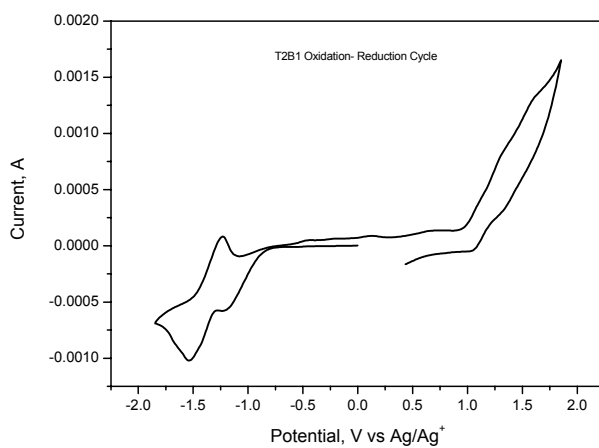
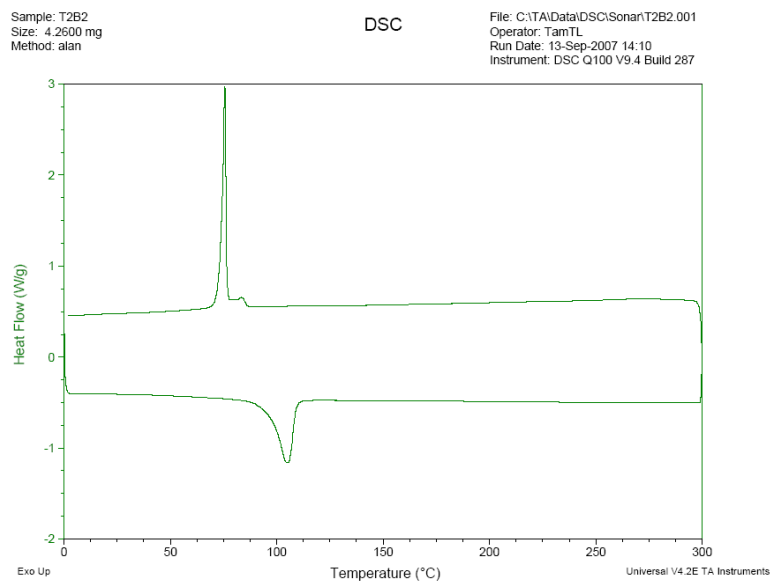


Fig. S5. Cyclic voltammogram of (a) **3T1B**, (b) **2T2B** and (c) **2T1B** (0.1 M n-Bu NPF₄/CH₂Cl₂, scan rate 100 mV/s).

(a)



(b)

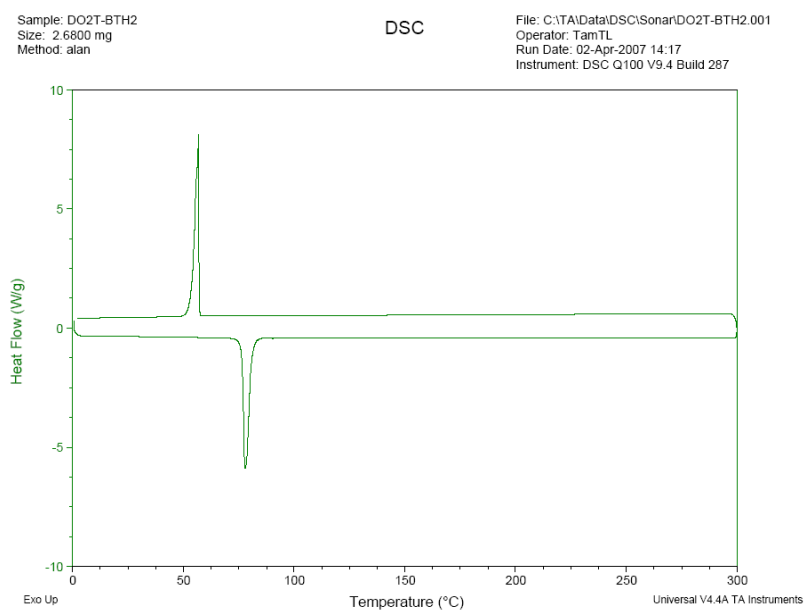
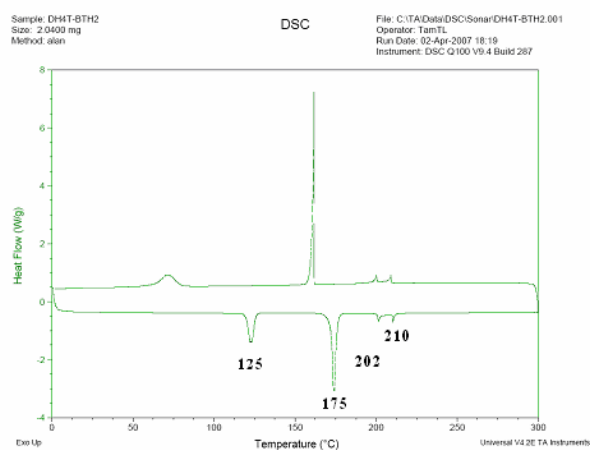
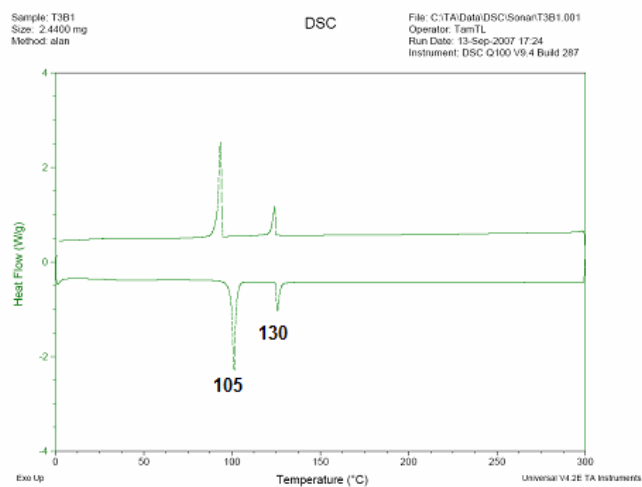


Fig. S6. Differential scanning calaiometry (DSC) thermographs of (a) **2T2B** and (b) **2T1B** under a N₂ atmosphere.



(a)



(b)

Fig. S7. Differential scanning calaiometry (DSC) thermographs of material (a) **4T1B** and (b) **3T1B** under a N₂ atmosphere.

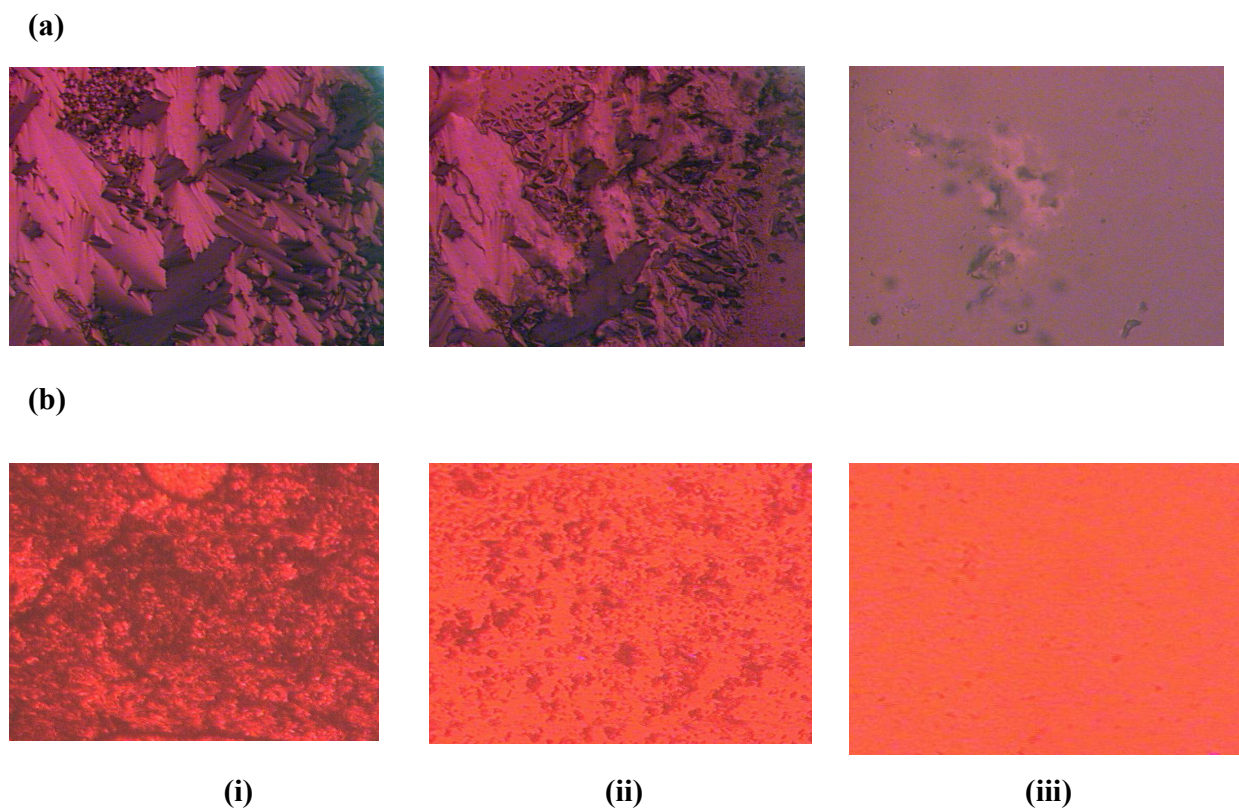
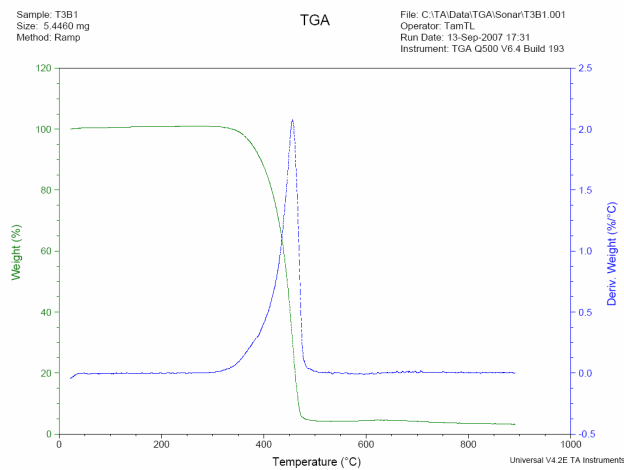
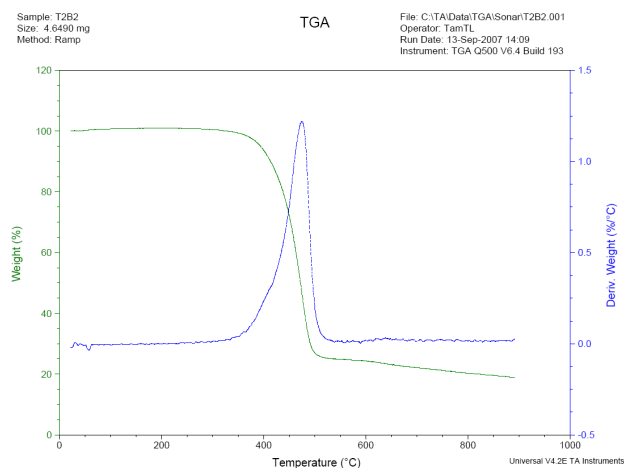


Fig. S8. Polarizing optical micrographs of **4T1B** (a) at: (i) 185°C, (ii) 195°C, (iii) 205°C, whereas **3T1B** (b) at: on heating i) 110°C, (ii) 130°C, (iii) 147°C, show liquid crystalline to isotropic transition.

(a)



(b)



(c)

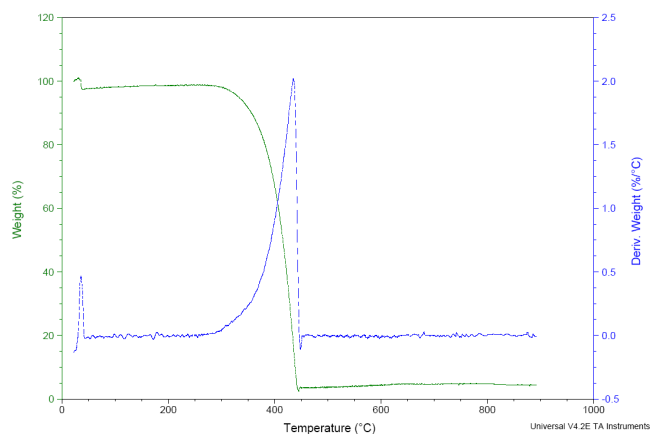


Fig. S9. Thermogravimetric analysis (TGA) spectra of (a) 3T1B (b) 2T2B and (c) 2T1B.

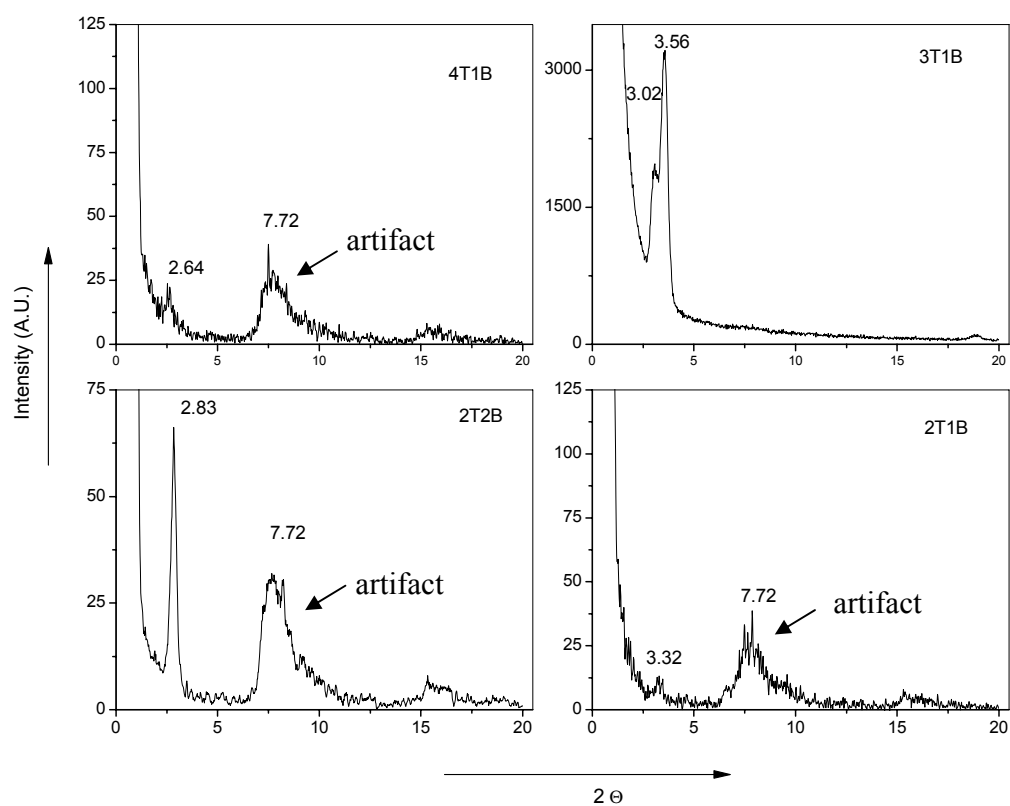


Fig. S10. X-ray diffraction pattern of **2T1B**, **2T2B**, **3T1B** and **4T1B** spin coated thin films (from chloroform solution) on Si/SiO₂ substrate. Peak at 7.72 degrees 2 theta is an artifact from the silicon substrate.