Supporting Information for the manuscript:

Interplay between Structural and Dielectric Features of New low k Hybrid Organic-Organometallic Nano-ribbons

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Dedicated to the memory of Klaus Müller, dear friend, great scientist and irreplaceable coworker

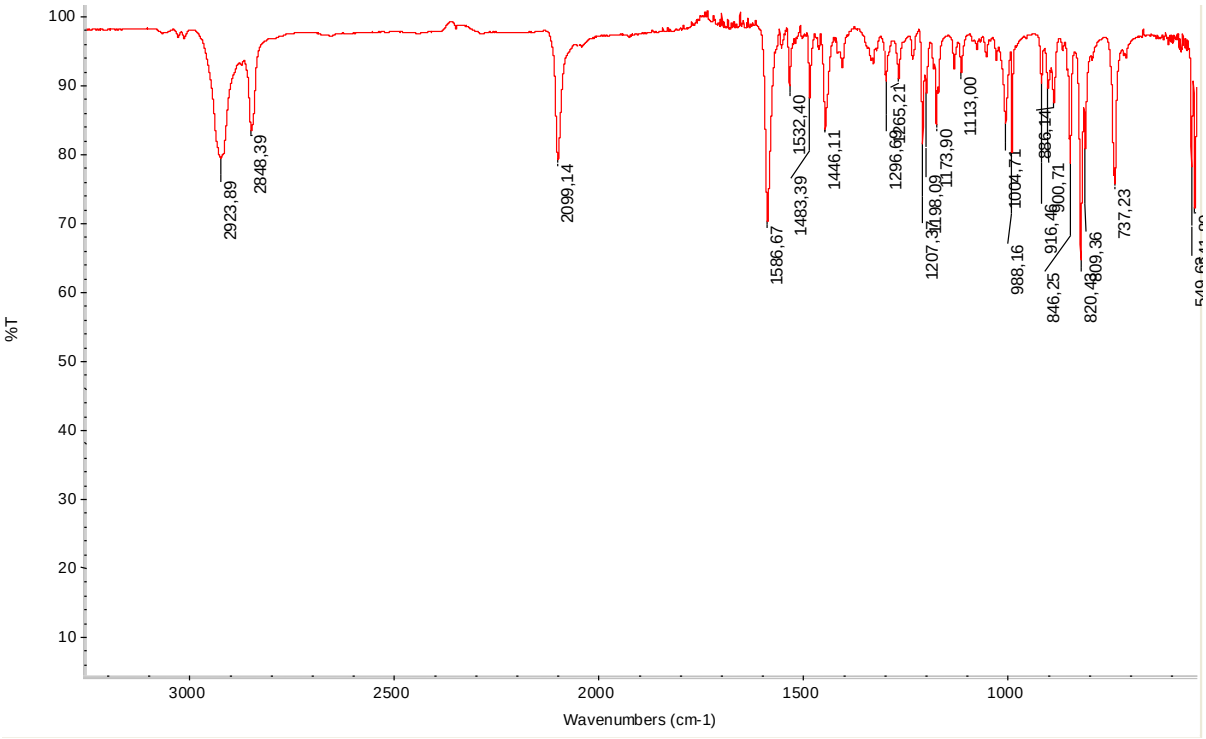

Figure 1-SI: IR spectrum of **1**
FT-IR (ATR): ν_{max} 2924(s, C-H), 2848(s, C-H), 2099(s, C≡C), 1587 (s, C=C), 1483, 1207, 1199, 988, 846, 737 cm^{-1}.

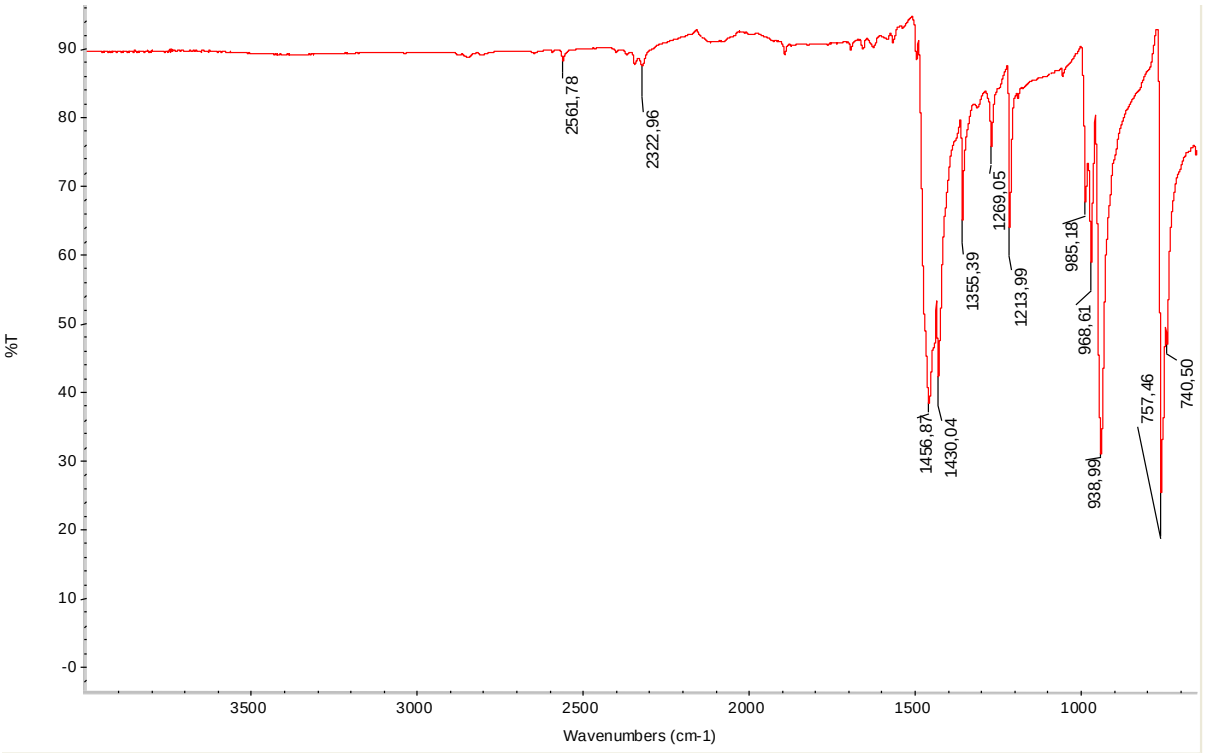

Figure 2-SI: IR spectrum of **2a**
FT-IR (ATR): 1,4-diiodotetrafluorobenzene (**2a**): ν_{max} 1457 (s, C-F), 1430 (s, C-F), 1355, 1214, 939, 757 cm^{-1}.

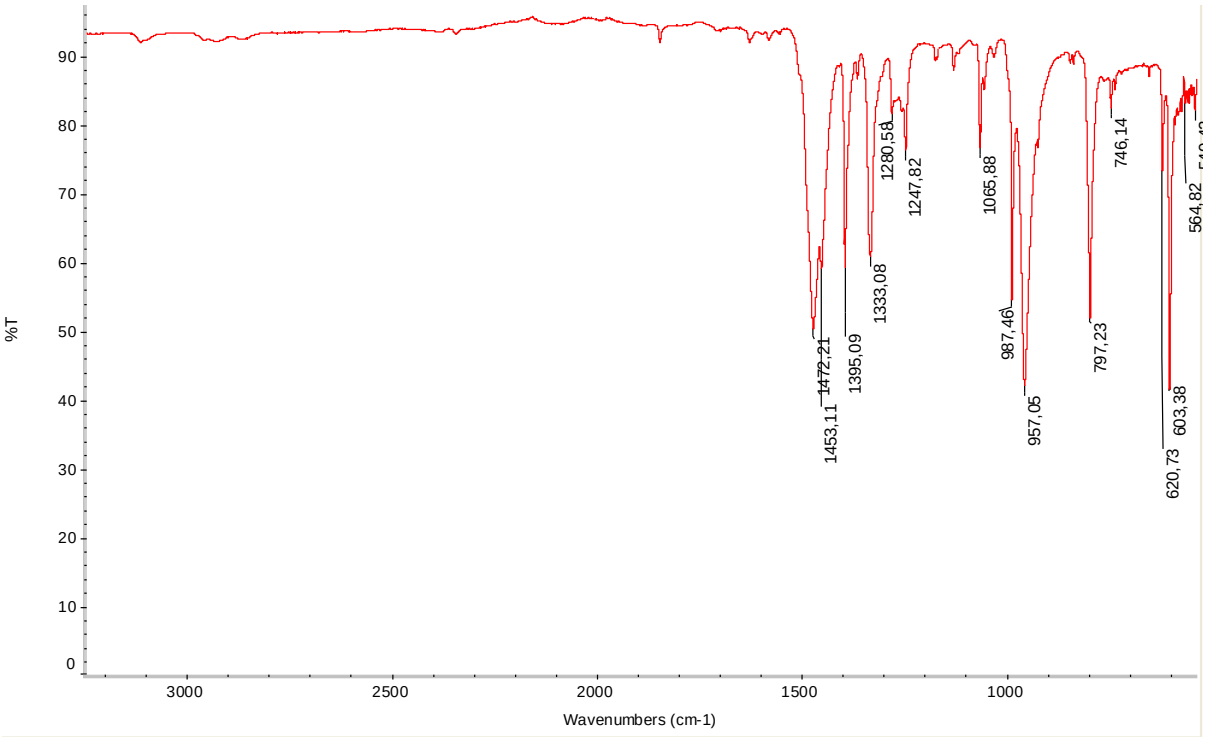

Figure 3-SI: IR spectrum of **2b**

FT-IR (ATR): 4,4'-diiodo-2,2',3,3'-octafluoro-*trans*-stilbene (**2b**): ν_{max} 1472 (s, C=C), 1453 (s, C-F), 1394, 1333, 956, 796, 602 cm^{-1}.

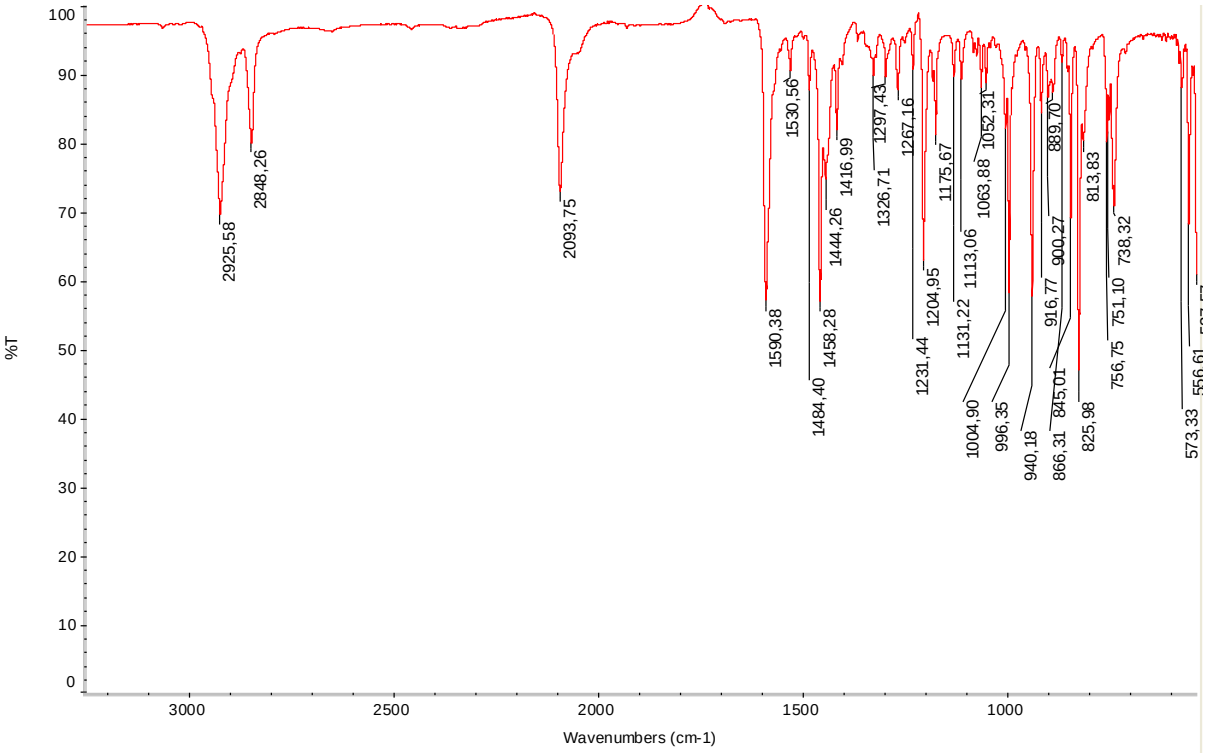

Figure 4-SI: IR spectrum of **3a**

FT-IR (ATR): Co-crystal **3a**: ν_{max} 2926 (s, C-H), 2848 (s, C-H), 2093 (s, C≡C), 1590 (s, C=C), 1458 (s, C-F), 1231, 1024, 1205, 1131, 1005, 996, 940, 826, 757 cm^{-1}

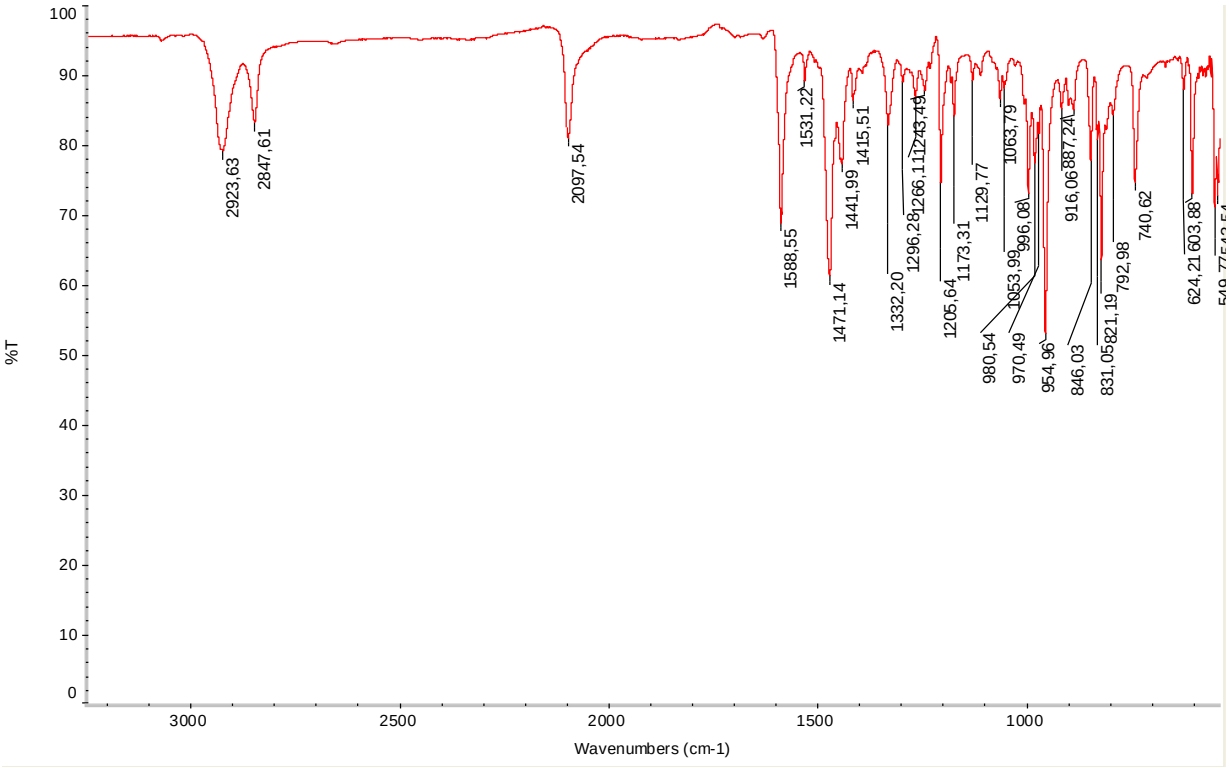

Figure 5-SI: IR spectrum of **3b**

FT-IR (ATR): Co-crystal **3b**: ν_{max} 2924 (s, C-H), 2848 (s, C-H), 2098 (s, C≡C), 1589 (s, C=C), 1471 (s, C-F), 1332, 1206, 1054, 986, 970, 955, 846, 831, 792, 624 cm^{-1}

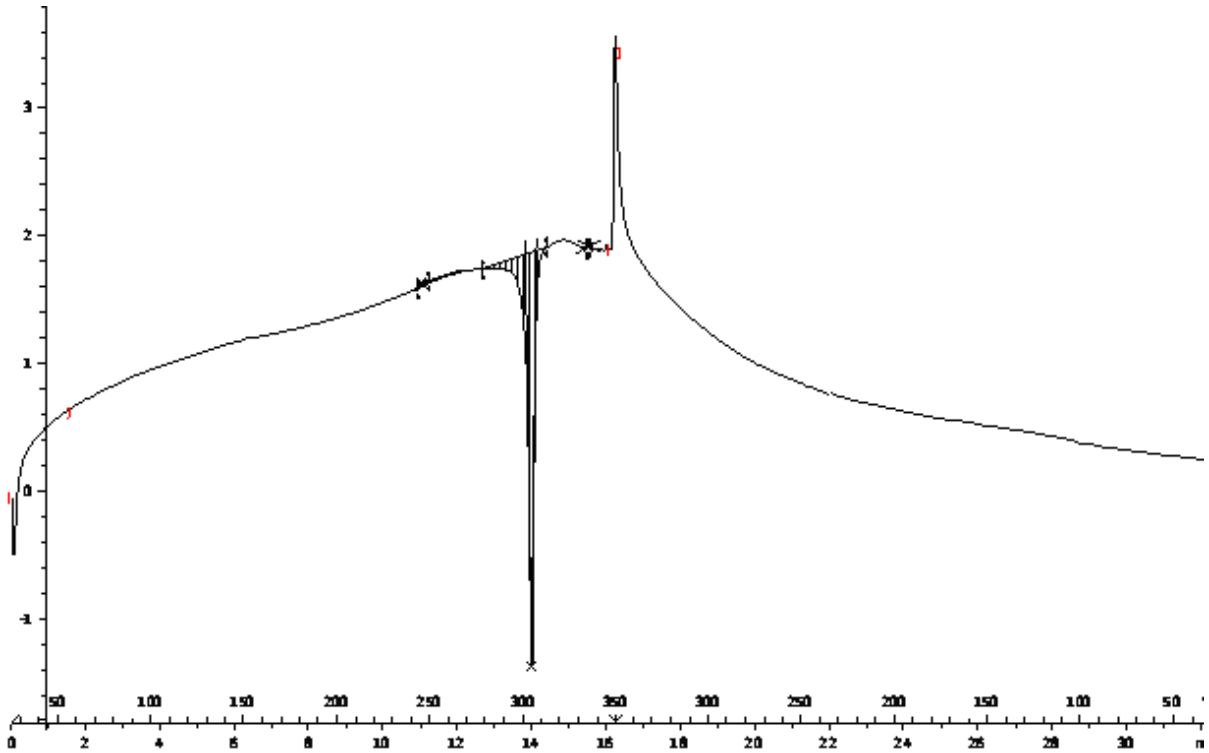

Figure 6-SI: DSC thermogram of **1**

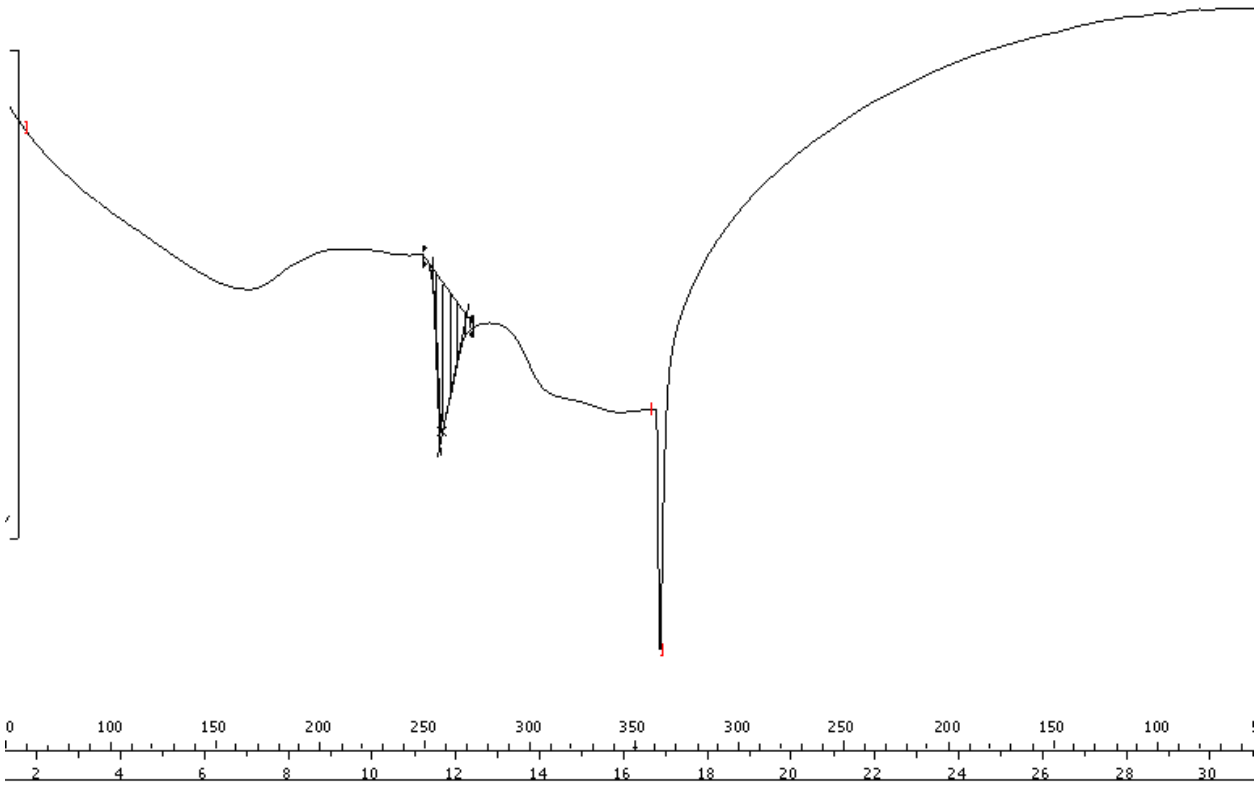

Figure 7-SI: DSC thermogram of **3a**

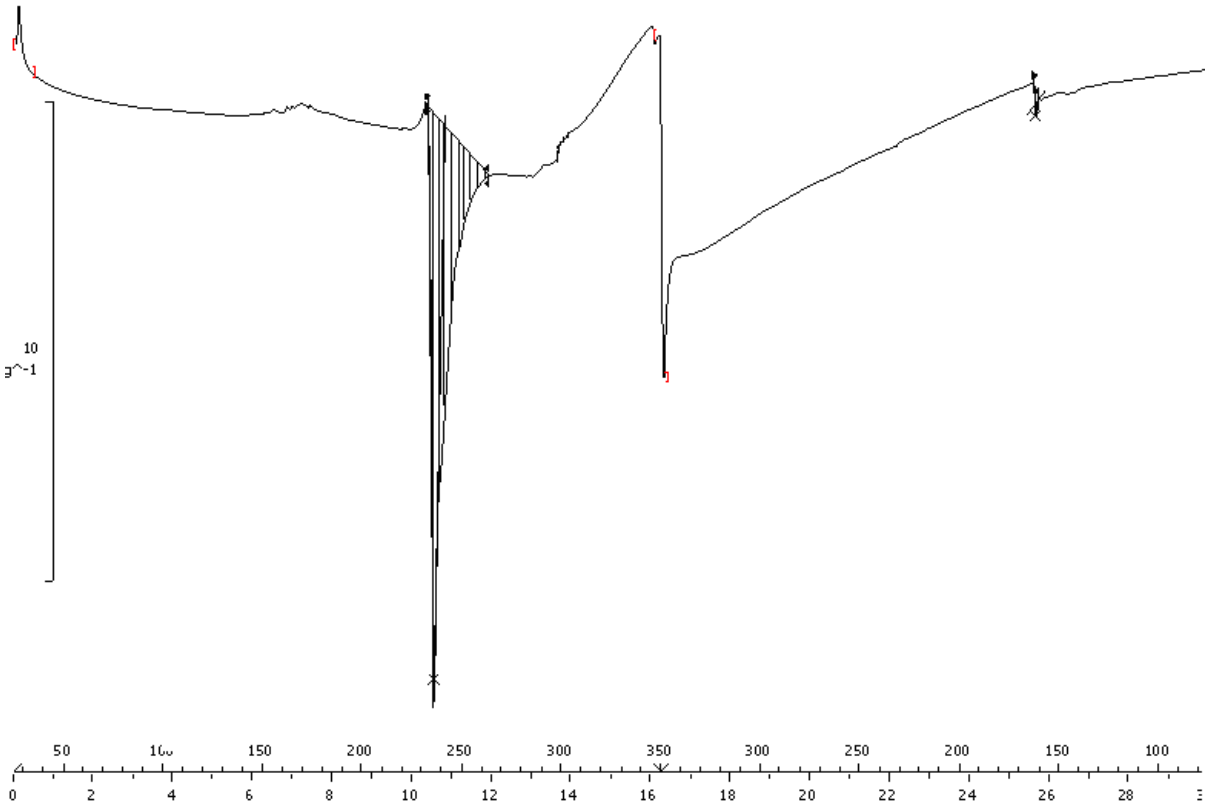

Figure 8-SI: DSC thermogram of **3b**

Table 1-SI. Geometrical parameter of other non covalent interaction present in cocystals.

Cocrystal 3a		
	Distance (Å)	**Angle (°)**
F1…H11B	2.632	C2B-F1…H11B: 133.4
F2…H22	2.610	C3B-F2…H22: 147.9
C2B…H15A	2.766	C15-H15A…C2B: 137.33
C3B…H15A	2.742	C15-H15A…C2B: 138.92
Cocrystal 3b		
	Distance (Å)	**Angle (°)**
F1…H6	2.396	C6-H6…F1: 151.88
F1…H39	2.484	C39-H39...F1: 151.81
F3…H24B	2.469	C24-H24B…F3: 139.41
F8B...C11	3.033	C7B-F8B...C11: 142.67
F8B...C12	3.165	C7B-F8B...C12: 166.77
F6B...C6A	2.853	C4B-F6B...C6A: 140.42
F6B...C7A	3.122	C4B-F6B...C7A: 147.86
H4...C1	2.855	C4-H4...C1: 145.31
H4...C2	2.848	C4-H4...C2: 169.32
H46A...C4	2.767	C46-H46A...C4: 146.41
H46A...C5	2.726	C46-H46A...C5: 159.84
H17B...C4A	2.880	C17-H17B...C4A: 173.31
H17B...C5A	2.890	C17-H17B...C4B:158.92

Note: VdW radius from http://www.webelements.com/: H 120 pm, F 147 pm; C 190 pm

X-Ray Powder Diffraction. X-ray powder diffraction experiments were carried out on a Bruker D8 Advance diffractometer operating in reflection mode with Ge-monochromated Cu Kα1 radiation (λ = 1.5406 Å) and a linear position-sensitive detector. Powder X-ray diffraction data were recorded at ambient temperature, with a 2θ range 5−37°, a step size 0.016°, exposure time 1.5 s per step.

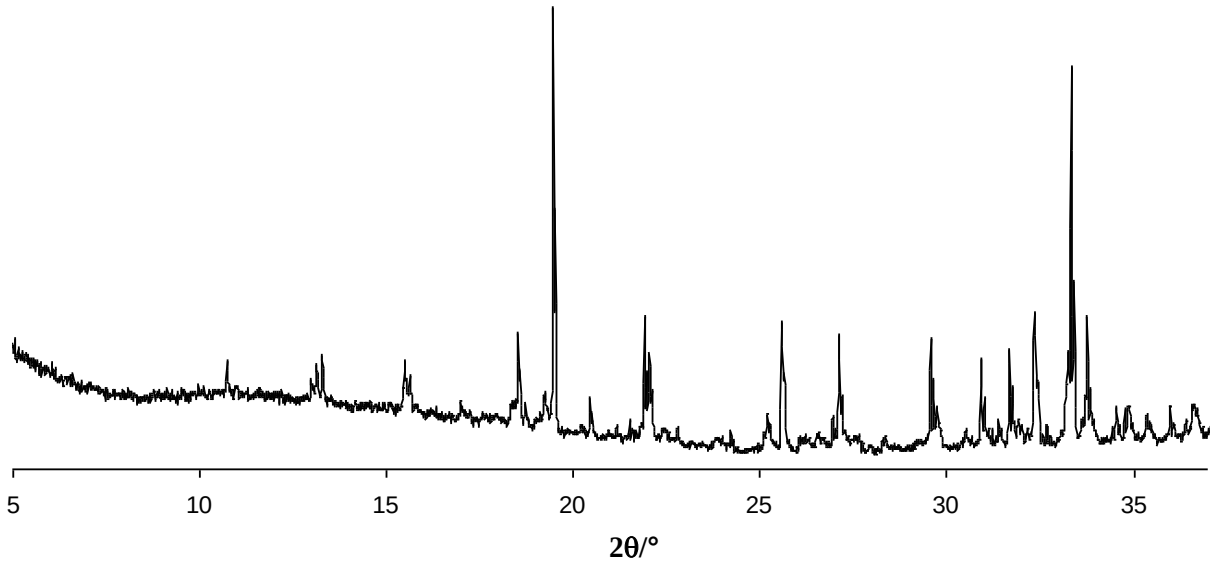

Figure 7-SI. Experimental XRPD of bulk **3a**

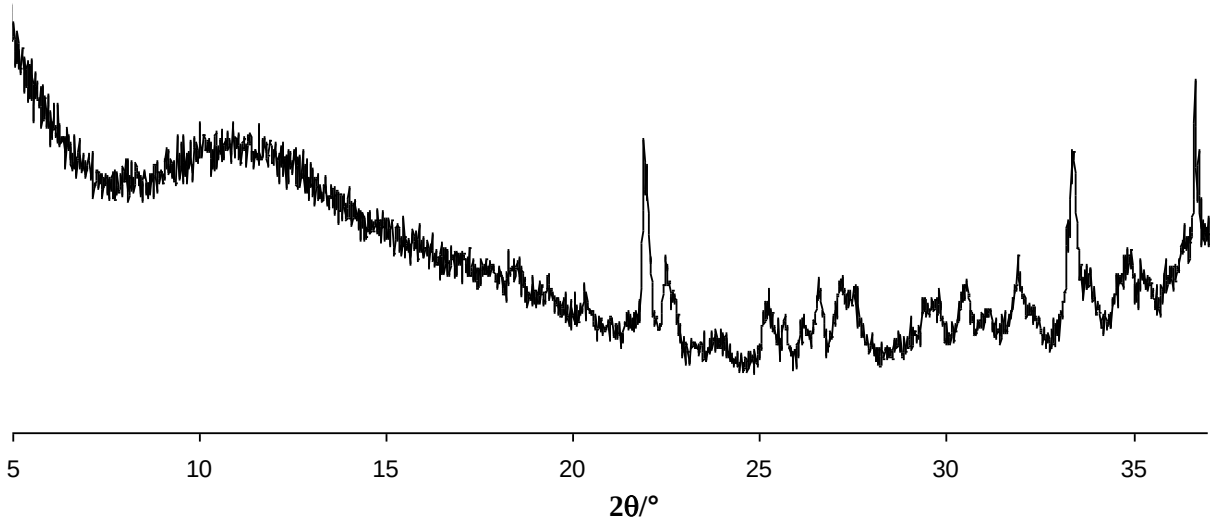

Figure 8-SI. Experimental XRPD of bulk **3a** pressed at 3000 psi

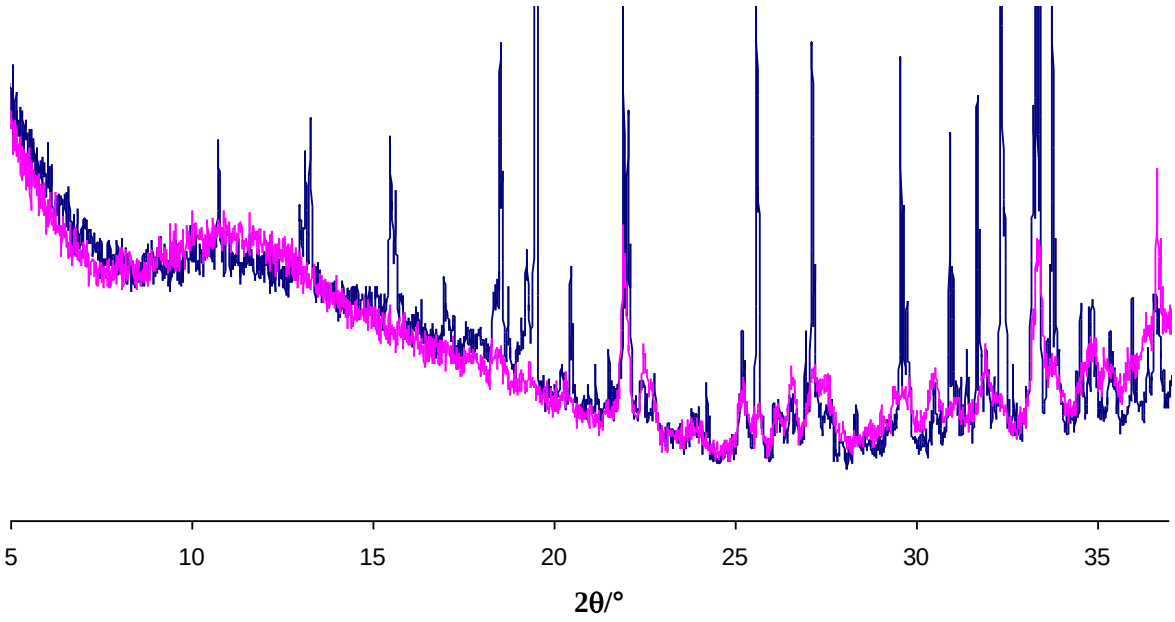

Figure 9-SI. Overlapping XRPD of bulk **3a (**blue line**)** and bulk **3a** pressed at 3000 psi (pink line)

Table 2-SI. Distance N···I involving 1,4-diiodotetrafluorobenzene as XB donor. Search performed on Cambridge Structural Database (Version 5.32)

CSD code	Distance N···I (Å)
RUYHID	2,667
OCOMUO04	2,722
OCOMUO05	2,725
OCOMUO03	2,728
OCOMUO02	2,736
ISIHUN	2,739
ISIHUN	2,748
ISIHUN01	2,752
OCOMUO01	2,753
OCOMUO	2,754
ISIHUN01	2,755
RUWVOV	2,758
QIHCAL06	2,768
RUWVOV	2,77
QIHCAL05	2,776
TOJBUQ	2,779
QIHCAL01	2,78
TOJBUQ	2,78
QIHCAL02	2,784
QABZUQ	2,794
QIHCAL04	2,798
QIHCOZ01	2,806
QIHCAL	2,811
TIWNET	2,812
QIHCAL03	2,82
JAQMEU	2,821
QIHBEO02	2,822
QIHBEO03	2,829

QABZUQ	2,837
KABLAC	2,838
DIVCUH	2,842
TOJBOK	2,843
QIHCOZ	2,845
AHEVOZ	2,848
QIHBEO	2,851
YIPCIK	2,858
YIPCIK	2,859
AHEVIT	2,86
QIHBEO01	2,864
WARMIM	2,87
TOJCEB	2,876
ISAHUF	2,88
GIDMEM	2,882
IPOSIP	2,893
IKIFOX	2,898
ISAHUF	2,899
AHAJEZ	2,91
DIVDAO	2,913
WARMIM	2,913
QABZUQ	2,913
IHUMUT	2,915
GIDMAI	2,919
ISIJOJ	2,921
MOFFUI	2,935
QOXQAW	2,94
ISIJOJ	2,951
MOFGAP	2,954
VABNUJ	2,959
JEFFOQ	2,969
VOMHAH	2,97
VOMHIP	2,971
OHOVUD	2,976
JAQMAQ	2,978
LUKMIN	2,998
JAQMIY	3,01
QOLJIK	3,014
JAQMAQ	3,022
QABZUQ	3,04
GIDMAI	3,045
HUMLOQ	3,061
JAQMAQ	3,067
AHEVOZ	3,081
RUWWIQ	3,087
EDAGIZ	3,089
GIXFOI	3,09
OHOVUD	3,091
OHOWAK	3,091
GIXFUO	3,093
FEQVON	3,097
VOMHAH	3,097
AHEVIT	3,102

TOJBUQ	3,102
ISIJEZ	3,111
ISIJEZ	3,117
QOLJIK	3,117
RUWWIQ	3,117
DIVCUH	3,12
TOJCEB	3,121
GIXGAV	3,124
GIXGEZ	3,124
DIVCUH	3,127
QOLJIK	3,127
GIXGAV	3,131
AHEVIT	3,133
GIXGAV	3,134
GIXFUO	3,144
VOMHIP	3,148
QUQXIK	3,148
GIXGAV	3,153
ISIJEZ01	3,158
TOJCEB	3,161
QIHCOZ01	3,168
VOMHIP	3,168
ISIJEZ01	3,169
QOXQAW	3,17
MAHCAB	3,17
ISIJEZ	3,171
RUWWIQ	3,171
OHOWAK	3,172
GIXGID	3,174
RUWVOV	3,174
MAHCIJ	3,177
JEFFOQ	3,209
GIXGID	3,222
OHOWAK	3,222
GIXGID	3,226
AHAJEZ	3,249
JAQMIY	3,274
MAHCEF	3,28
GIXGEZ	3,303
EDAGIZ	3,315
EDAGIZ	3,342
GIXGEZ	3,35
MAHCEF	3,35
MAHCAB	3,352
RUWVOV	3,375
MAHCAB	3,375
MAHCAB	3,379
GIXGOJ	3,389
RUWVOV	3,395
ISIHUN	3,413
ISIHUN	3,426
ISIHUN01	3,428
ISIHUN01	3,429

MAHBUU	3,435
MAHBUU	3,437
QIHCOZ01	3,442
MAHBUU	3,442
GIXGOJ	3,456
LUKMIN	3,461
MOFGAP	3,47
MAHCIJ	3,47
GIXGOJ	3,474
QIHCOZ	3,486
QUQXIK	3,488
ISIJEZ	3,49
WARMIM	3,49
RUYHID	3,498
GIXGUP	3,505
JAQMEU	3,505
VABNUJ	3,508
ISIHUN	3,52
RUWVOV	3,522
WARMIM	3,527
ISIHUN01	3,529
QUQXIK	3,53
MAHCIJ	3,535
MOFFUI	3,54
ISIJEZ01	3,541
QUQXIK	3,541
MOFGAP	3,544
MOFFUI	3,547
TOJCEB	3,551
MOFFUI	3,553
QOLJIK	3,554
TIWNET	3,556
RUWVOV	3,556
TOJBUQ	3,557
QUQXIK	3,558
RUWVOV	3,56
RUWVOV	3,56
ISIHUN	3,562
IHUMUT	3,565
TOJBUQ	3,566
AHAJEZ	3,567
ISIHUN01	3,572
GIDMEM	3,574
QABZUQ	3,577
QIHCOZ01	3,579
GIXGUP	3,586
MOFGAP	3,594
KABLAC	3,595
ISIHUN	3,601
GIXGEZ	3,606
QIHCAL06	3,606
ISIHUN01	3,609
ISIJOJ	3,611

GIXGOJ	3,612
TOJBUQ	3,612
ISAHUF	3,617
QIHCAL05	3,617
RUYHID	3,622
QIHBEO02	3,623
QIHCAL01	3,625
QIHCAL02	3,627
QIHBEO03	3,628
MAHCIJ	3,628
AHEVOZ	3,63
GIDMAI	3,63
AHEVIT	3,631
ISAHUF	3,631
DIVCUH	3,634
VOMHAH	3,636
QIHCAL04	3,638
DIVDAO	3,639
QIHCOZ	3,65
QIHBEO01	3,651
QIHCAL	3,652
QIHCAL03	3,653
QIHBEO	3,655
QABZUQ	3,658
ISIJOJ	3,665
ISIJOJ	3,666
ISIHUN01	3,667
ISIHUN	3,669
QABZUQ	3,678
QIHCAL06	3,679
JAQMIY	3,734
GIXGAV	3,924