

Supplementary Information for

Cyclopentadithiophene-Benzothiadiazole Oligomers and Polymers; 5 Synthesis, Characterisation, Field-Effect Transistor and Photovoltaic Characteristics

M. Horie,^{a,c,*} J. Kettle,^{b,c} C.-Y. Yu,^{d,c} L. A. Majewski,^{e,d} S.-W. Chang,^a J. Kirkpatrick,^f S. M. Tuladhar,^g
J. Nelson,^g B. R. Saunders^h and M. L. Turner^{c,*}

¹⁰ ^a Frontier Research Center on Fundamental and Applied Sciences of Matters, Department of Chemical Engineering,
National Tsing-Hua University, 101, Sec. 2, Kuang-Fu Road, Hsin-Chu, 30013 Taiwan

^b School of Electronic Engineering, Bangor University, Dean st., Bangor, Gwynedd, LL57 1UT, Wales, UK.

^c Organic Materials Innovation Centre, School of Chemistry, University of Manchester, Oxford Road, Manchester, M13
9PL, UK.

¹⁵ ^d Department of Materials Science and Engineering, National Taiwan University of Science and Technology, 43, Section 4,
Keelung Road, Taipei, Taiwan, 106

^e School of Electrical and Electronic Engineering, University of Manchester, Manchester, M60 1QD, UK

^f Oxford Martin School, University of Oxford, UK

^g Department of Physics, Imperial College, London, UK.

²⁰ ^h School of Materials, University of Manchester, Grosvenor St, Manchester, M1 7HS, UK.

Correspondence Address

Dr. Masaki Horie

²⁵ Frontier Research Center on Fundamental and Applied Sciences of Matters

Department of Chemical Engineering, National Tsing-Hua University

101, Sec. 2, Kuang-Fu Road, Hsin-Chu, 30013 Taiwan

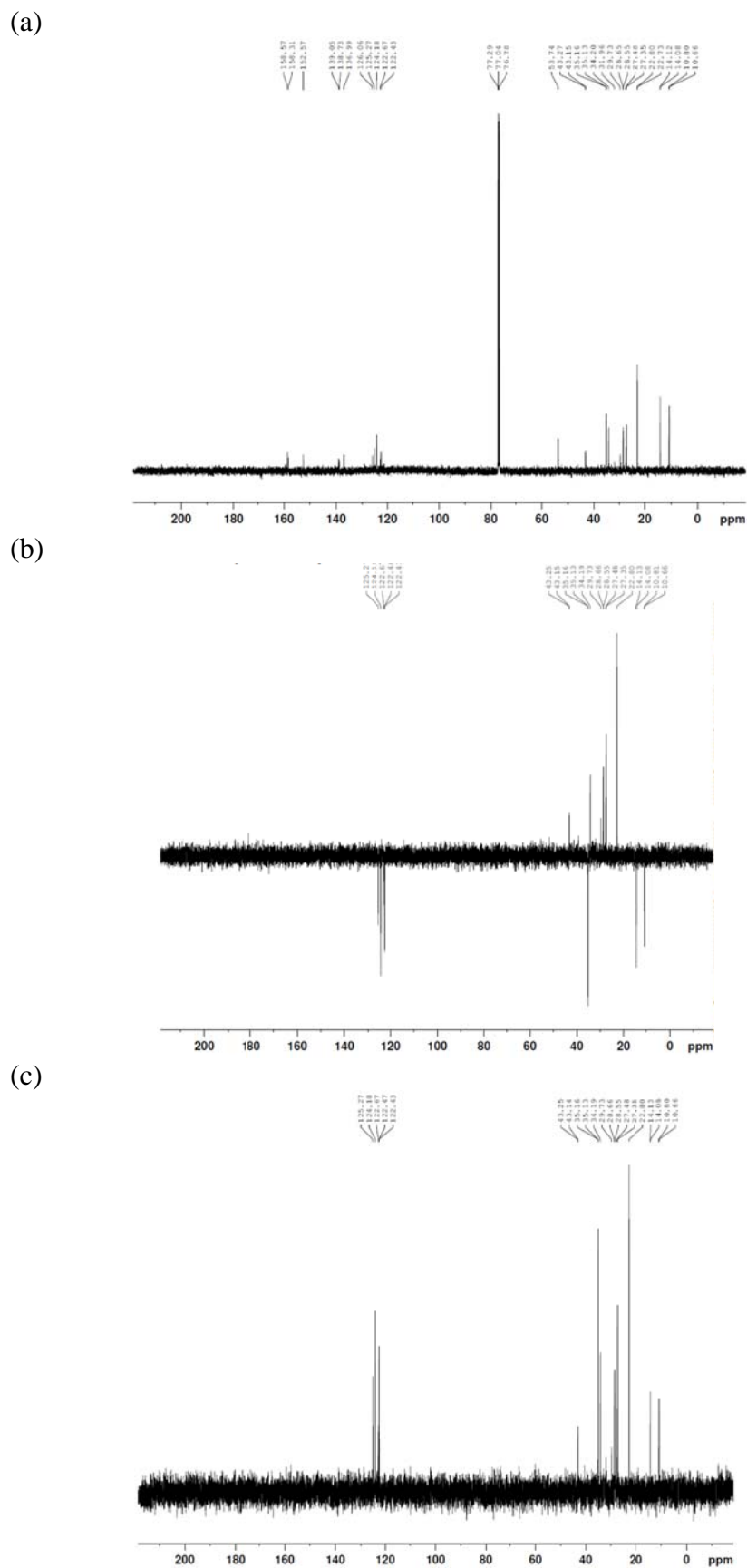
E-mail: mhorie@mx.nthu.edu.tw

³⁰ Professor Michael L. Turner

Organic Materials Innovation Centre, School of Chemistry, University of Manchester

Oxford Road, Manchester, M13 9PL, UK

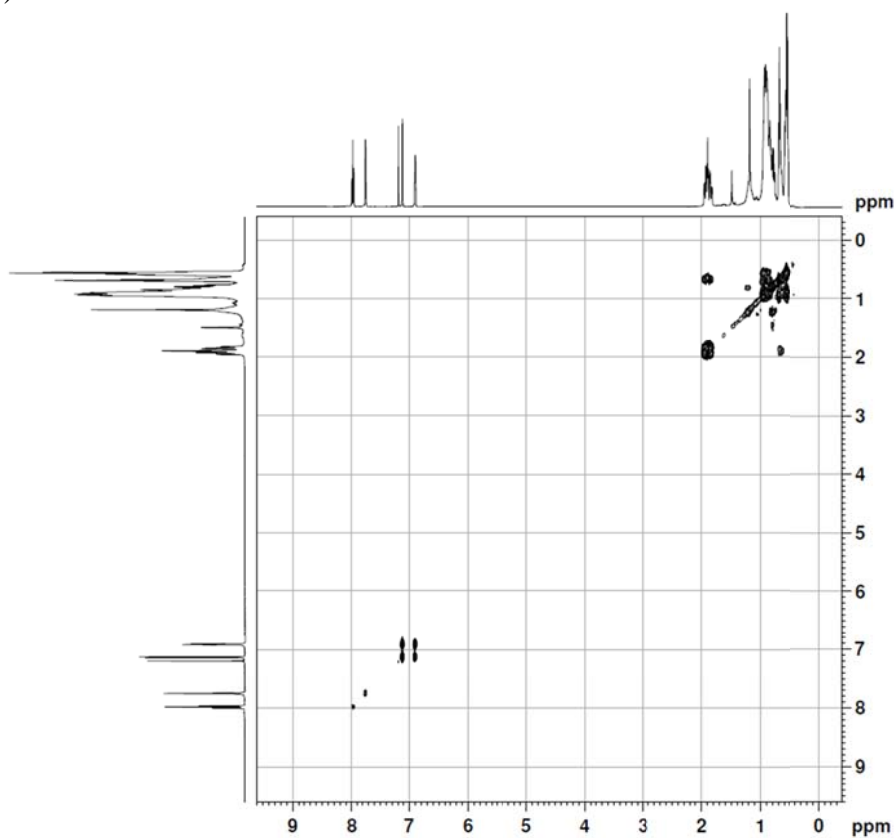
E-mail: michael.turner@manchester.ac.uk



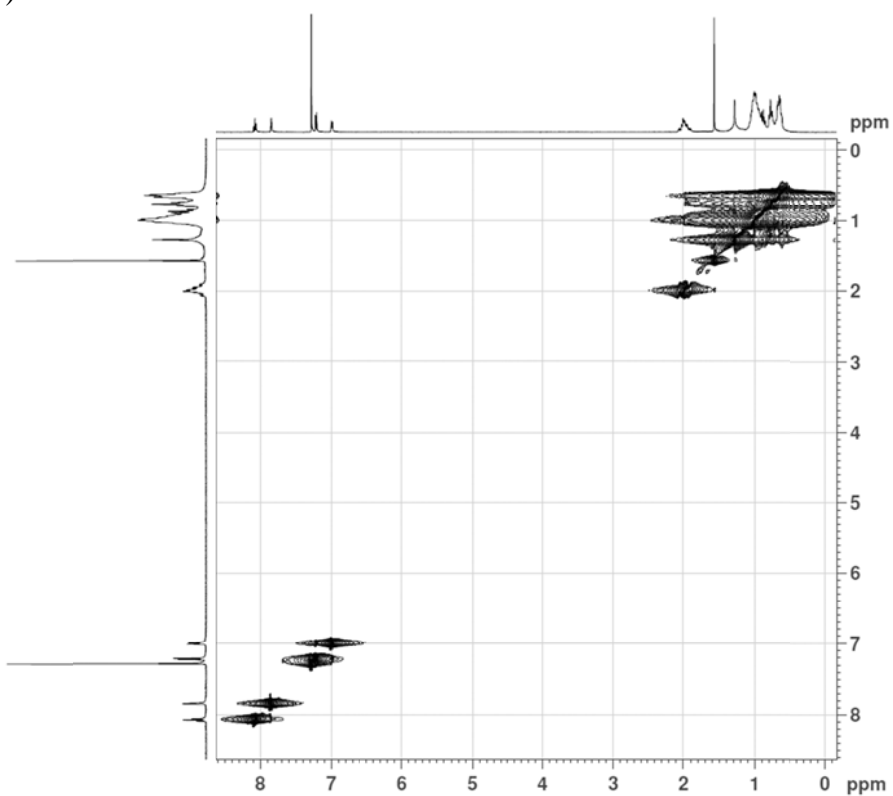
5

Figure SI1. (a) ^{13}C NMR, (b) DEPT (135 degrees) and (c) DEPT (90 degrees) spectra of oligomer 1.

(a)

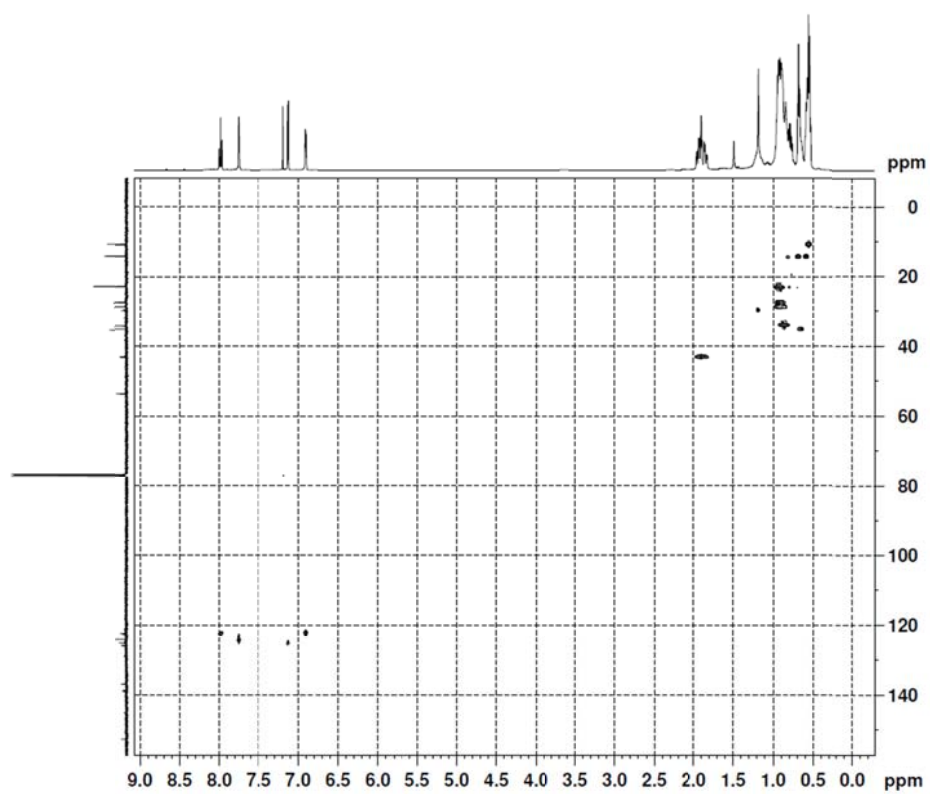


(b)

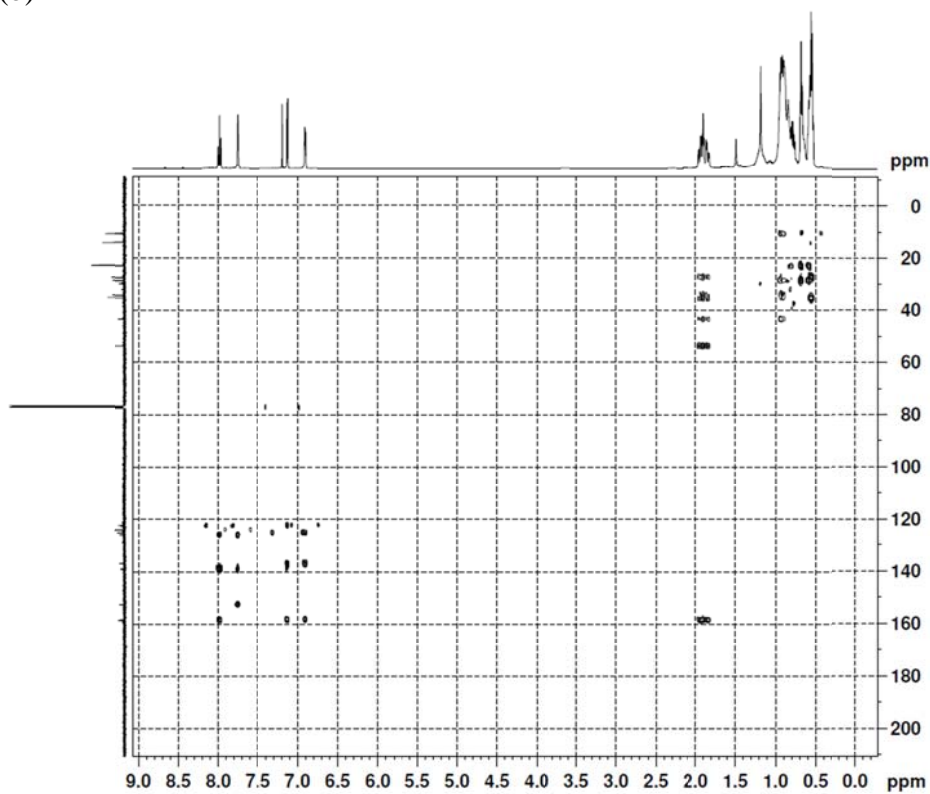


5 **Figure SI2.** (a) ¹H-¹H COSY and (b) ¹H-¹H NOESY spectra of oligomer **1**.

(a)

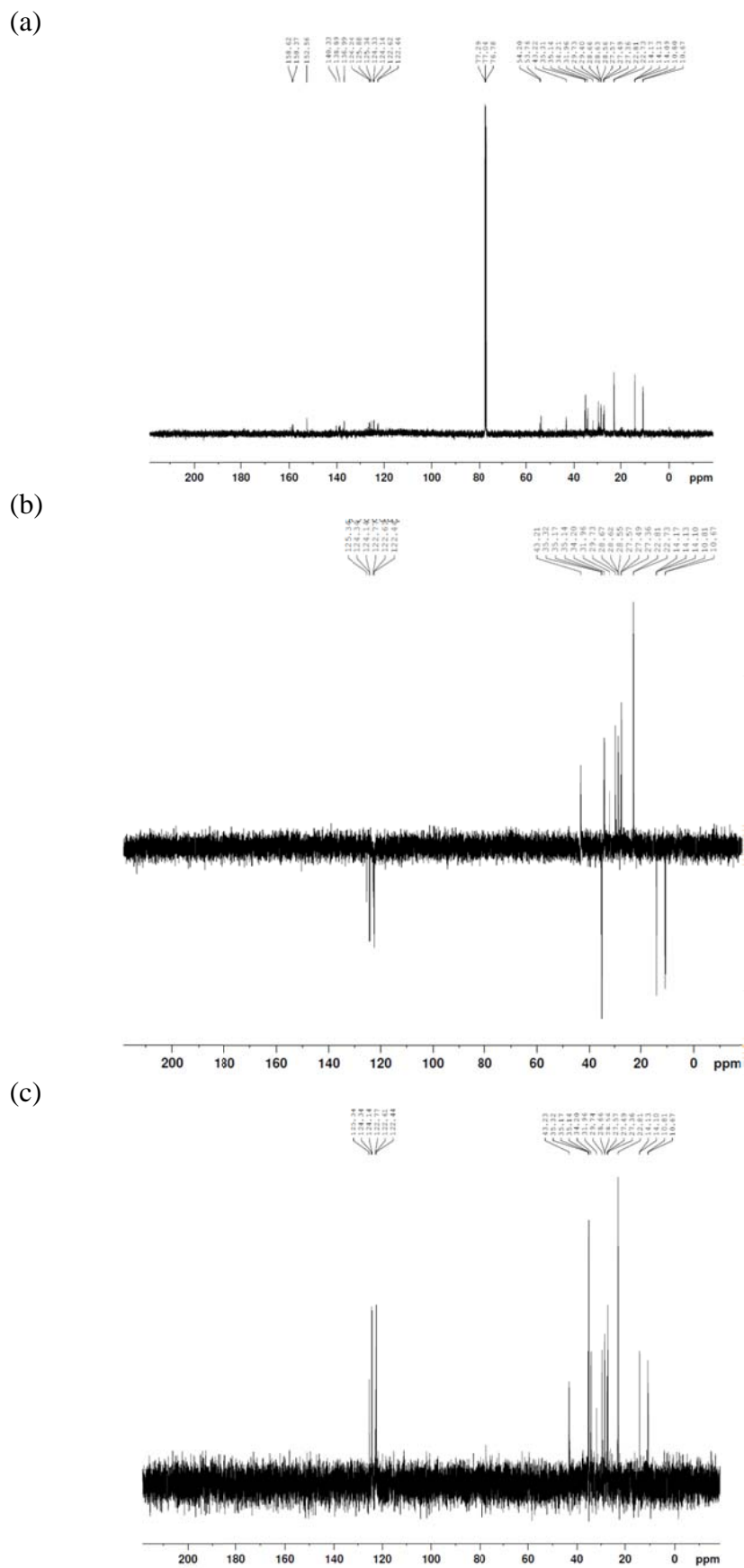


(b)



5

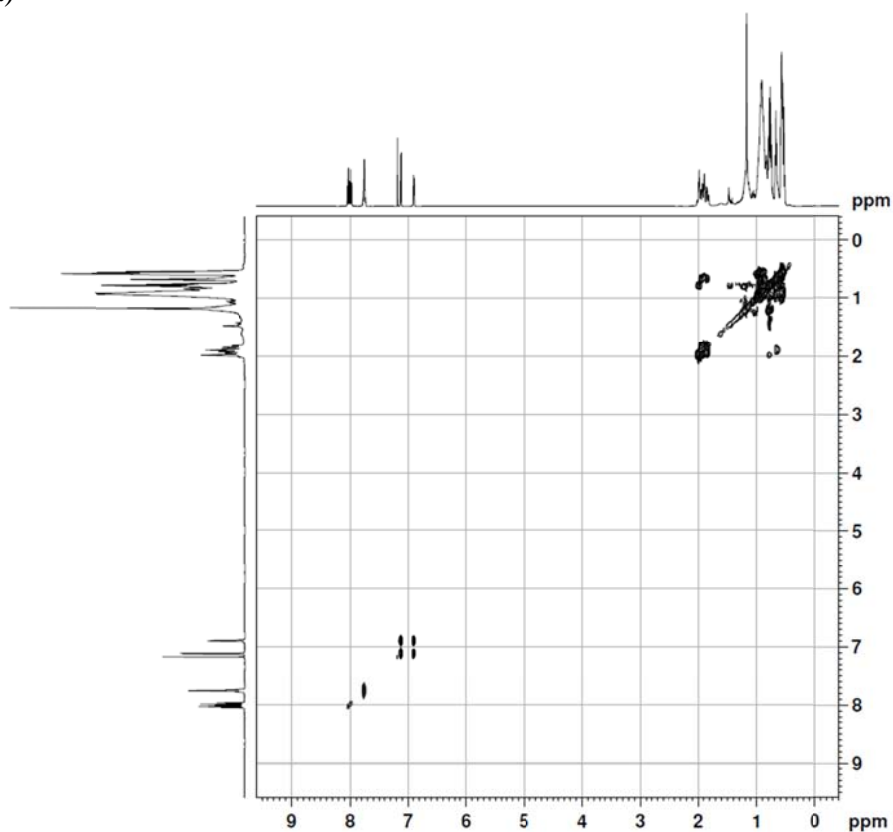
Figure SI3. (a) HMQC and (b) HMBC spectra of oligomer **1**.



5

Figure SI4. (a) ^{13}C NMR, (b) DEPT (135 degrees) and (c) DEPT (90 degrees) spectra of oligomer **2**.

(a)



(b)

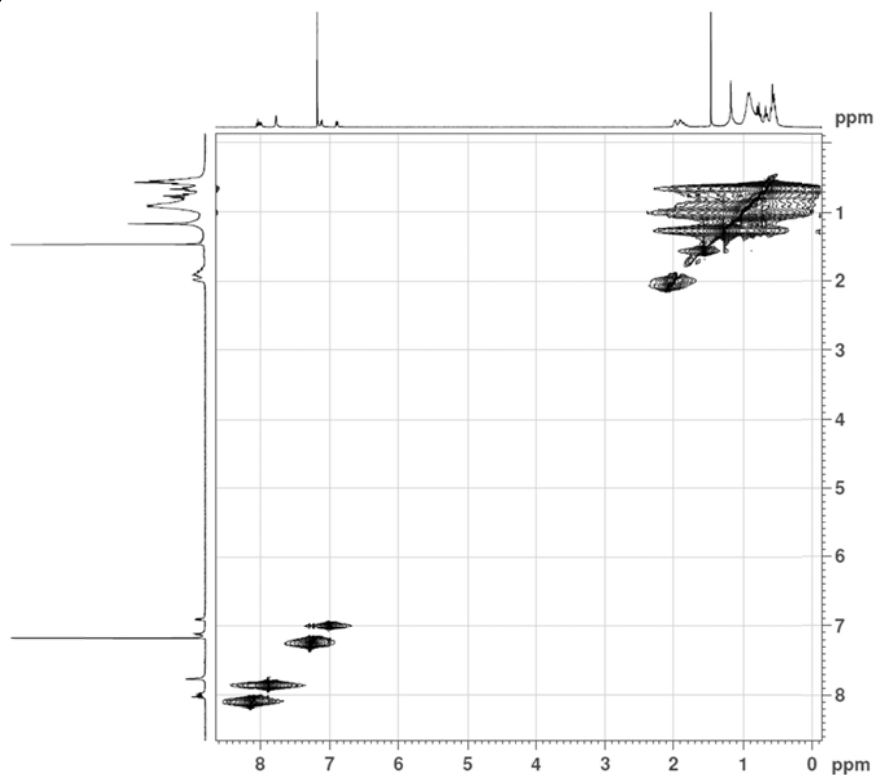
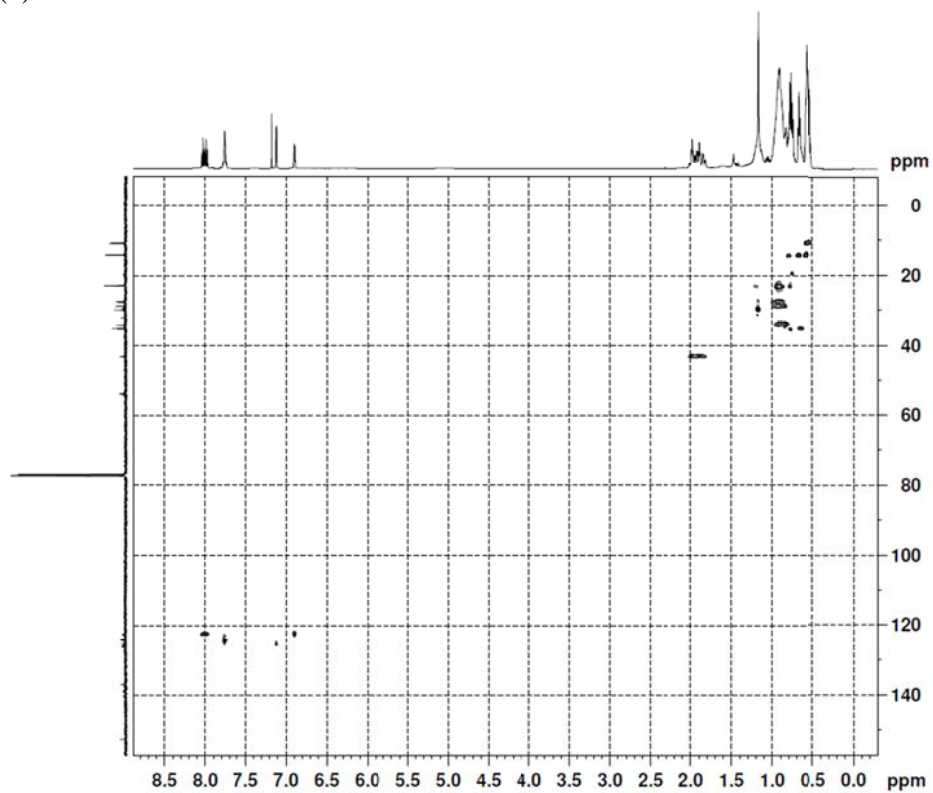
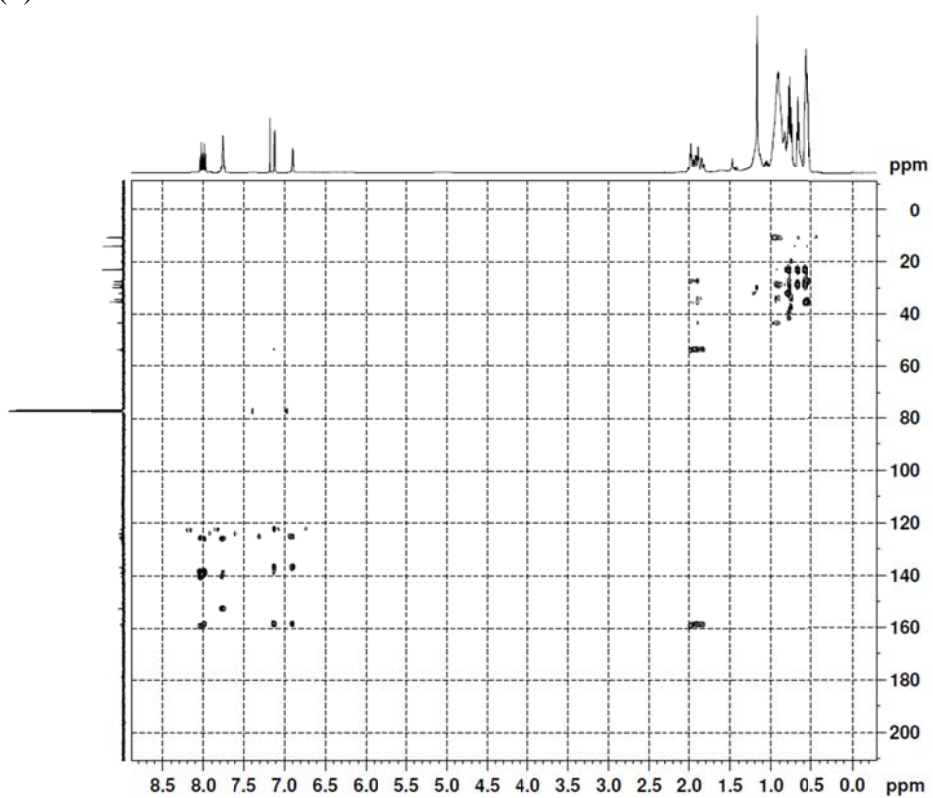


Figure SI5. (a) ¹H-¹H COSY and (b) ¹H-¹H NOESY spectra of oligomer 2.

(a)



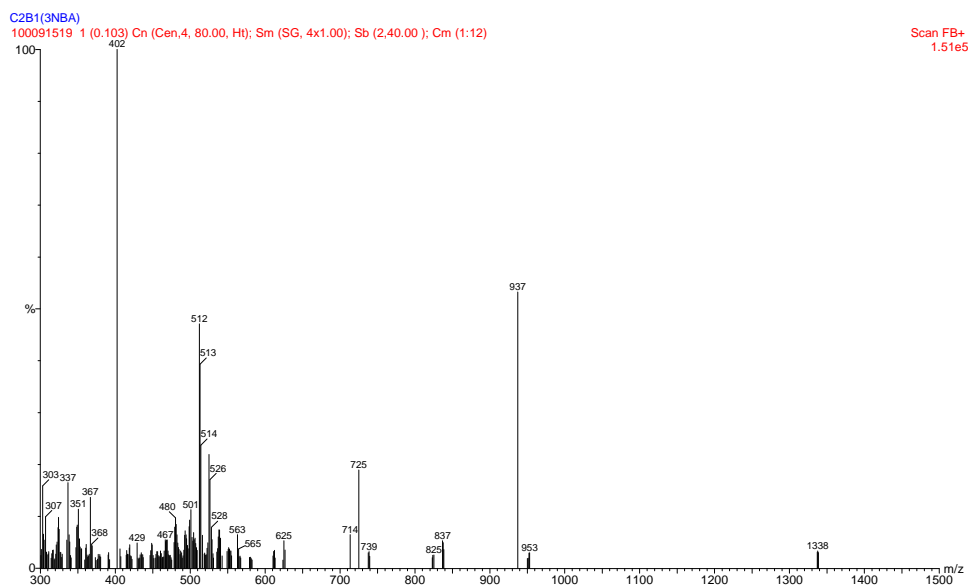
(b)



5

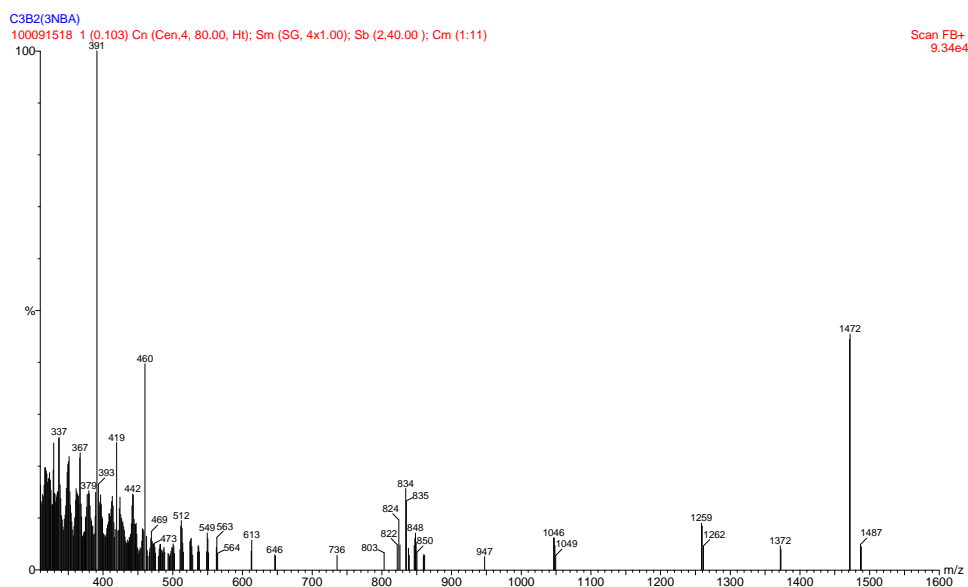
Figure SI6. (a) HMQC and (g) HMBC spectra of oligomer 2.

(a)



5

(b)



10

Figure SI7. FABMS spectra of (a) **1** ($m/z = 937 [M]^+$) and (b) **2** ($m/z = 1472 [M]^+$) in the presence of nitrobenzyl alcohol as matrix.