Supplementary Material (ESI) for Journal of Materials Chemistry

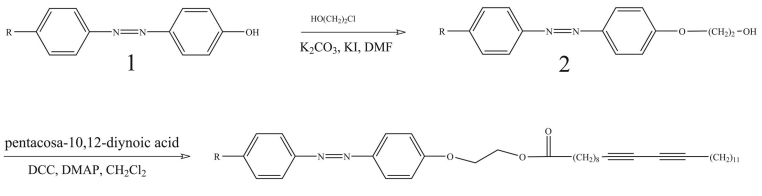
Supplementary data

Morphologies, Structure and Chromatic properties of Azobenzene Substituted Polydiacetylene Supramolelular Assemblies

Qiang Ye, Xian You, Gang Zou*, Qijin Zhang

Department of Polymer Science and Engineering, Joint Laboratory of Polymer Thin Films and Solution, University of Science and Technology of China, Hefei, Anhui 230026, P. R. China. E-mail: gangzou@ustc.edu.cn

An azobenzene mesogen-substituted diacetylene monomers was synthesized according to scheme 1.



Scheme 1. Synthetic routes of diacetylenic momomers containing azobenzene chromophores.

The detailed experimental procedures were given below. A mixture of **1** (2.23g, 10 mmol), potassium carbonate (4.14 g) and potassium iodide (0.01 g) was dissolved in DMF 50 mL, and 2-chloroethanol (0.89 g, 11 mmol) dissolved in DMF 10 mL was added drop wise. The resulting mixture was stirred at 120 ^{o}C for 72 h. The reaction was stopped by the addition of excess water to the mixture. The crude product was precipitated. The precipitate was filtered off and recrystallized twice from ethanol to give a yellow powder. Yield 78 %. mp: 203 °C. ^{1}H NMR (300 MHz, $CDCl_3$) δ: 7.97 (dd, J = 9.0Hz, 8.4Hz, 4H), 7.78 (d, J = 8.4Hz, 2H), 7.05 (d, J = 9.0Hz, 2H), 4.18 (t, J = 4.3Hz, 2H), 4.00 (t, J = 4.3Hz, 2H).

A soltion of N, N'-dicyclohexylcarbodiimide (DCC) (0.275 g, 1.3 mmol) and dry CH_2Cl_2 20 mL was added dropwise at room temperature to a mixture of Pentacosa-10,12-diynoic acid (0.1 g, 0.27 mmol) , **2** (0.08 g, 0.3 mmol) and a small

quantity of 4-dimethylamino pyridine (DMAP) in dry CH_2Cl_2 40 mL. The mixture was stirred at 25 ^oC for 72 h. The resulting mixture was filtered with suction and repeatedly washed with water, 1.2 M HCl, 5% aqueous $NaHCO_3$, and water in order. The crude product was purified by silica gel column. After the solvent was removed, a yellow solid was obtained. **3** Yield 65 %. mp: 92-93°C. ^1H NMR (300 MHz, $CDCl_3$) δ: 7.96 (dd, J = 9.0Hz,8.4Hz, 4H), 7.79 (d, J = 8.4Hz, 2H), 7.03 (d, J = 9.0Hz, 2H), 4.47 (t, J = 4.6Hz, 2H), 4.27 (t, J = 4.6Hz, 2H), 2.36 (t, J = 7.5Hz, 2H), 2.21 (m, 4H), 1.64 (m, 2H), 1.49 (m, 4H), 1.44-1.33 (m, 26H), 0.89 (t, J = 6.6Hz, 3H). The ^1H NMR spectra of **3** was given below.

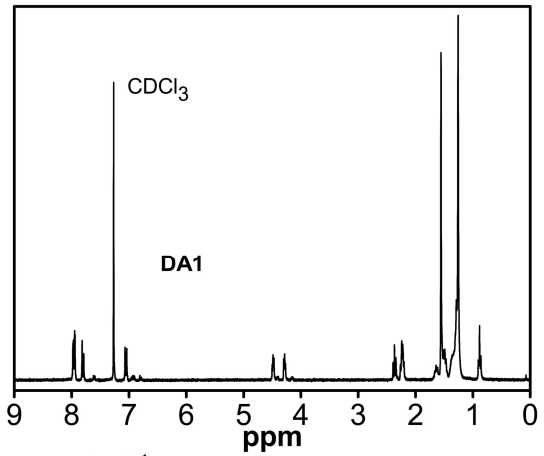


Fig.1 ^1H NMR spectra of DA1 molecules