

Short Note

## Synthesis of 4-[(4-dimethylaminobenzylidene)amino]phenyl tetradecanoate

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Received: 16 January 2009 / Accepted: 7 April 2009 / Published: 5 June 2009

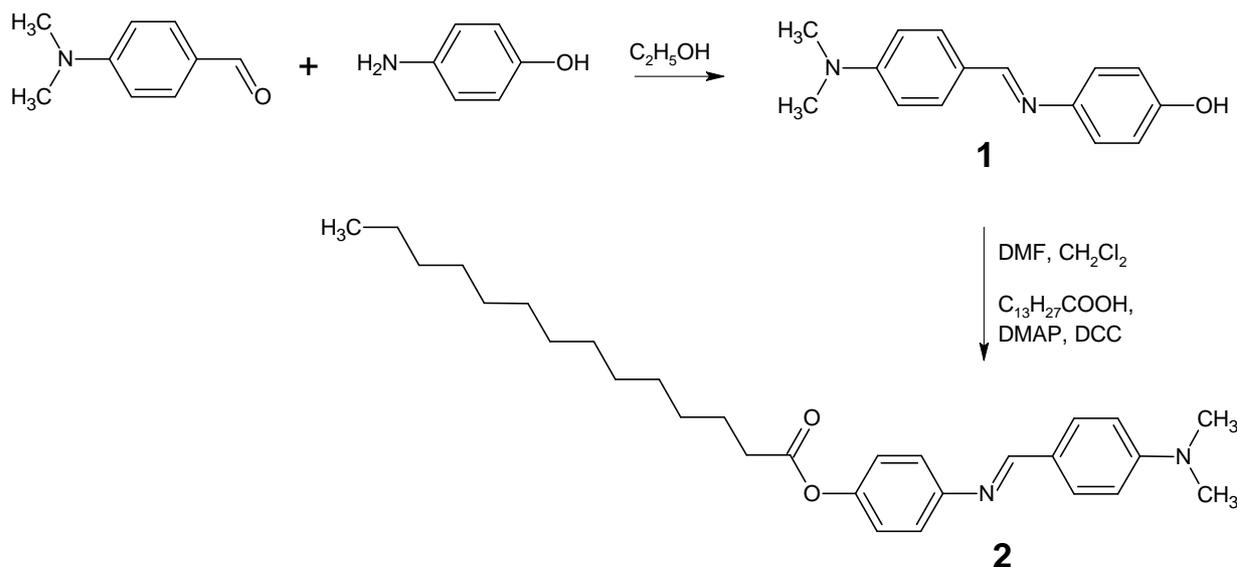
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**Abstract:** A new Schiff base ester, 4-[(4-dimethylaminobenzylidene)amino]phenyl tetradecanoate, was synthesized and its IR, <sup>1</sup>H NMR, <sup>13</sup>C NMR and MS spectroscopic data are reported.

**Keywords:** 4-[(4-dimethylaminobenzylidene)amino]phenyl tetradecanoate; Schiff base; alkyl chain

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The discovery of Schiff base 4-methoxybenzylidene-4'-butylaniline and the application of its room temperature nematic phase in displays sparked some renewed interest in liquid crystals [1]. In our earlier studies, the results revealed that ester and azomethine linking units are useful structural components for generating mesomorphism in two and three aromatic rings thermotropic liquid crystals [2-5]. Therefore, continuing investigations have been carried out which focused on the synthesis of a new Schiff base ester, 4-[(4-dimethylaminobenzylidene)amino]phenyl tetradecanoate.



The title compound was synthesized according to a previously reported method [6-10]. A solution of 4-dimethylaminobenzaldehyde (1.19 g, 8 mmol) and 4-aminophenol (0.87 g, 8 mmol) in absolute ethanol (40 mL) was heated under reflux for 3 hours. Compound 1 thus obtained was recrystallized from absolute ethanol. Then, Schiff base 1 (0.48 g, 2 mmol) in dimethylformamide (DMF) (1 mL), was added to a solution of tetradecanoic acid (0.46 g, 2 mmol) and 4-dimethylaminopyridine (DMAP) (0.12 g, 1 mmol) in dichloromethane (20 mL). The resulting mixture was stirred in an ice bath. To this solution, N,N'-dicyclohexylcarbodiimide (DCC) (0.41 g, 2 mmol) dissolved in dichloromethane (10 mL) was added dropwise while stirring in the ice bath for an hour. The resulting mixture was subsequently stirred at room temperature for another 3 hours. Then, the reaction mixture was filtered and the excess solvent was removed from the filtrate by evaporation. Recrystallization from absolute ethanol gave the Schiff base 2 as a yellow solid (0.19 g, 21%).

Melting point: 105.7 °C.

EI-MS  $m/z$  (rel. int. %): 451 (6)  $[M+1]^+$ , 450 (20)  $[M]^+$ , 240 (100).

IR (KBr,  $cm^{-1}$ ): 2953, 2918, 2850 (C-H aliphatic); 1752 (C=O ester); 1608 (C=N); 1590, 1498 (C=C aromatic).

$^1H$  NMR (300 MHz,  $CDCl_3$ ):  $\delta/ppm$  0.90 (3H, t,  $J = 6.5$  Hz,  $CH_3$ ), 1.28-1.42 {m, 20H,  $CH_3(CH_2)_{10}$ }, 1.77 (quint, 2H,  $J = 7.3$  Hz,  $-CH_2CH_2COO-$ ), 2.58 (t, 2H,  $J = 7.4$  Hz,  $-CH_2COO-$ ), 3.08 {s, 6H,  $-N(CH_3)_2$ }, 6.74 (d, 2H,  $J = 8.9$  Hz, Ar-H), 7.07 (d, 2H,  $J = 8.8$  Hz, Ar-H), 7.20 (d, 2H,  $J = 8.8$  Hz, Ar-H), 7.76 (d, 2H,  $J = 8.9$ , Ar-H), 8.33 (s, 1H, CH=N).

$^{13}C$  NMR (75 MHz,  $CDCl_3$ ):  $\delta/ppm$  14.63 ( $CH_3$ ), 23.17, 29.57, 29.74, 29.83, 29.93, 30.06, 30.11, 30.14, 32.38 for methylene carbons ( $CH_3(CH_2)_{10}$ ), 25.41 ( $-CH_2CH_2COO-$ ), 34.85 ( $-CH_2COO-$ ), 40.63 { $N(CH_3)_2$ }, 111.92, 122.18, 122.48, 124.53, 130.91, 148.48, 150.90, 152.89 for aromatic carbons, 160.93 (CH=N), 173.09 (COO).

Elemental analysis: Calculated for C<sub>29</sub>H<sub>42</sub>N<sub>2</sub>O<sub>2</sub>: C, 77.29%, H, 9.39%, N, 6.22%; Found: C, 77.37%, H, 9.47%, N, 6.16%.

### Acknowledgements

The author (S.T. Ha) would like to thank Universiti Tunku Abdul Rahman (UTAR) for the research facilities and the financial support through UTAR Vote No. 6202/O05. L.K. Ong would like to acknowledge UTAR for the award of the research and teaching assistantships.

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