Short Note

Synthesis of (2E)-2-(2,4,6-Trimethoxybenzylidene)indan-1-one

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Donor-acceptor (D-p-A) dyestuff and colorants represent a vast majority of organic chromogens. Such compounds have found many applications such as in dyeing of fabric, coloring of toners, and in image forming and optical information storage technologies. Some of these compounds are also used as sources of tunable (dye laser) radiation [1-3].

Recently, we synthesised a series of benzylidenes based on cyclopentanone and its cyclopentylidene malononitrile condensate [4]. In this paper, we report the synthesis of (2E)-2-(2,4,6-trimethoxybenzylidene)indan-1-one (3) [5] as a candidate donor-acceptor conjugated dye for possible applications in third order nonlinear optics.

\[
\begin{align*}
\text{CHO} & \quad \text{OMe} & \quad \text{MeO} \\
\text{MeO} & \quad \text{OMe} & \quad \text{MeO}
\end{align*}
\]

\[
\begin{align*}
\text{1} & \quad + \quad \text{2} & \quad \text{NaOH} & \quad \text{MeO} \\
\text{MeO} & \quad \text{MeO} & \quad \text{OMe}
\end{align*}
\]

2,4,6-Trimethoxybenzaldehyde (2.0 g, 0.01 mol) and 1-indanone (1.34 g, 0.01 mol) were dissolved in 25 ml of ethanol and then heated to boiling before sodium hydroxide (10 ml, 0.10 M) was added. The reaction mixture was refluxed for 3 h, cooled and then the precipitate was filtered and recrystallized from ethanol.

m.p. 185 °C
Yield: 68%
Color: Yellow crystals
IR; ν (cm\(^{-1}\)) : 2934 (C–H), 1685 (C=O), 1134 (C–O).
\(^1\)H NMR;(DMSO-\(d_6\), 400 MHz): 7.90 (d, 1H, \(J = 8.0\) Hz, H\(_{\text{aromatic}}\)), 7.83 (s, 1H, olefinic H), 7.57 (t, 1H, \(J = 7.6\) Hz, H\(_{\text{aromatic}}\)), 7.46 (d, 1H, \(J = 7.6\) Hz, H\(_{\text{aromatic}}\)), 7.37 (t, H, \(J = 7.6\) Hz, H\(_{\text{aromatic}}\)), 6.20 (s, 2H, H\(_{\text{aromatic}}\)), 3.89 (s, 9H, OMe), 1.71 (s, 2H, CH\(_2\)).
Elemental analysis: Calculated for C\(_{19}\)H\(_{18}\)O\(_4\): C, 73.53%, H, 5.85%; Found: C, 73.68%, H, 5.91%

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References and Notes

5. The title compound was obtained as a single isomer, according to TLC; assignment of the \(E\) configuration is based on the chemical shift (7.83 ppm) of the olefinic proton.

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