4-Ferrocenylaniline

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The reduction of 4-nitrophenylferrocene with tin in acidic condition gives 4-ferrocenylaniline, which is an important intermediate for the synthesis of ferrocene-containing Schiff's base liquid crystals [1].

To a stirred mixture of 4-nitrophenylferrocene [2] (2 g, 7 mmol) in 25 ml of concentrated hydrochloric acid and 40 ml ethanol is added tin (granulated, 4.5 g, 40 mmol) and the reaction mixture is heated under reflux for 4 h. After the mixture has cooled, 200 ml water is added and aqueous NaOH is added to adjust the pH to 14 before filtration. The filtrate is extracted with CH$_2$Cl$_2$ and dried (Na$_2$SO$_4$). The solvent is removed by rotary evaporation. The crude product is recrystallized from petroleum ether (boiling range 60-80°C) to give 4-ferrocenylaniline as an red-orange solid (1.4 g, 76%).

M.p: 157-159°C.

IR(KBr, cm$^{-1}$): 3437, 3350, 1621, 1605, 1529, 1454, 1103, 998.

$^1$HNMR(CDCl$_3$): 7.3(d, 2H, C$_6$H$_4$), 7.65(d, 2H, C$_6$H$_4$), 4.0(s, 5H, C$_5$H$_5$), 4.2(s, 2H, C$_5$H$_4$), 4.5(s, 2H, C$_5$H$_4$), 3.4(s, 2H, NH$_2$).

Elemental analysis for C$_{16}$H$_{15}$FeN: calculated, C, 68.57; H, 5.38; N, 5.00%. Found: C, 68.85; H, 5.46; N, 5.12%.

References


Sample Availability: Available from the authors and from MDPI.

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