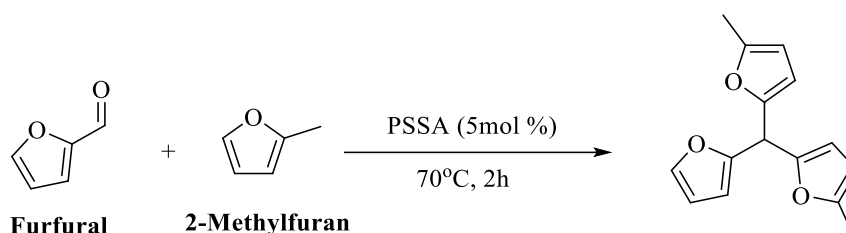


Experimental Protocol for the preparation of a precursor of biofuel from Furfural and 2-methylfuran



Reference: RSC Sustainability, 2026,4, 1986-1995. <https://doi.org/10.1039/D5SU00927H>

WATCH STEP-BY-STEP VIDEO OF THIS PROTOCOL

A 9 mL pressure tube was charged with 0.5 mL of 2-methylfuran (used as both solvent and reactant), furfural (41.4 μ L, 0.5 mmol, 1 equiv.), and PSSA catalyst (4.93 mg, 0.025 mmol, 5 mol%). The reaction mixture was stirred at 70 °C for 2 hours and monitored by TLC (hexane: ethyl acetate, 4:1).

Upon completion, the reaction mixture was filtered under vacuum to recover the PSSA catalyst. The filtrate was transferred to a round-bottom flask, diluted with ethyl acetate, and concentrated using a rotary evaporator. The crude product was purified by column chromatography using a 19:1 mixture of hexane: ethyl acetate as the eluent.

Fractions containing the product were collected, transferred to a tared round-bottom flask, and the solvent was removed. The flask was then placed on a Schlenk line for further drying.

The product was obtained quantitatively as a light pink oil (121 mg, 0.5 mmol) and subjected to IR and NMR analysis.

- **IR (oil) ν** 3107, 2981, 2951, 2922, 2883, 1451, 1195, 1073, 934, 886, 816 cm^{-1}
- **¹H NMR (400 MHz, CDCl₃) δ** 7.33 (d, 1H), 6.29 (d, $J=3.13$ Hz, 1H), 6.10 (m, 1H), 5.97 (s, $J=3.13$ Hz, 2H), 5.89-5.88 (m, 2H), 5.42(s, 1H), 2.23 (d, 6H)
- **¹³C NMR (100 MHz, CDCl₃) δ** 152.6, 151.6, 150.4, 141.9, 110.4, 108.0, 107.2, 106.4, 39.1, 13.6.

