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Supporting Information

Functionalized graphene oxide as an efficient adsorbent for CO_2 capture and support for heterogeneous catalysis

Piyali Bhanja, Sabuj Kanti Das, Astam Kumar Patra and Asim Bhaumik*

Department of Materials Science, Indian Association for the Cultivation of Science, Jadavpur, Kolkata-700 032, India,

**Corresponding author. E-mail:* msab@iacs.res.in

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Section S1: FT-IR spectra of synthesized 2,6-diformyl-4-methylphenol

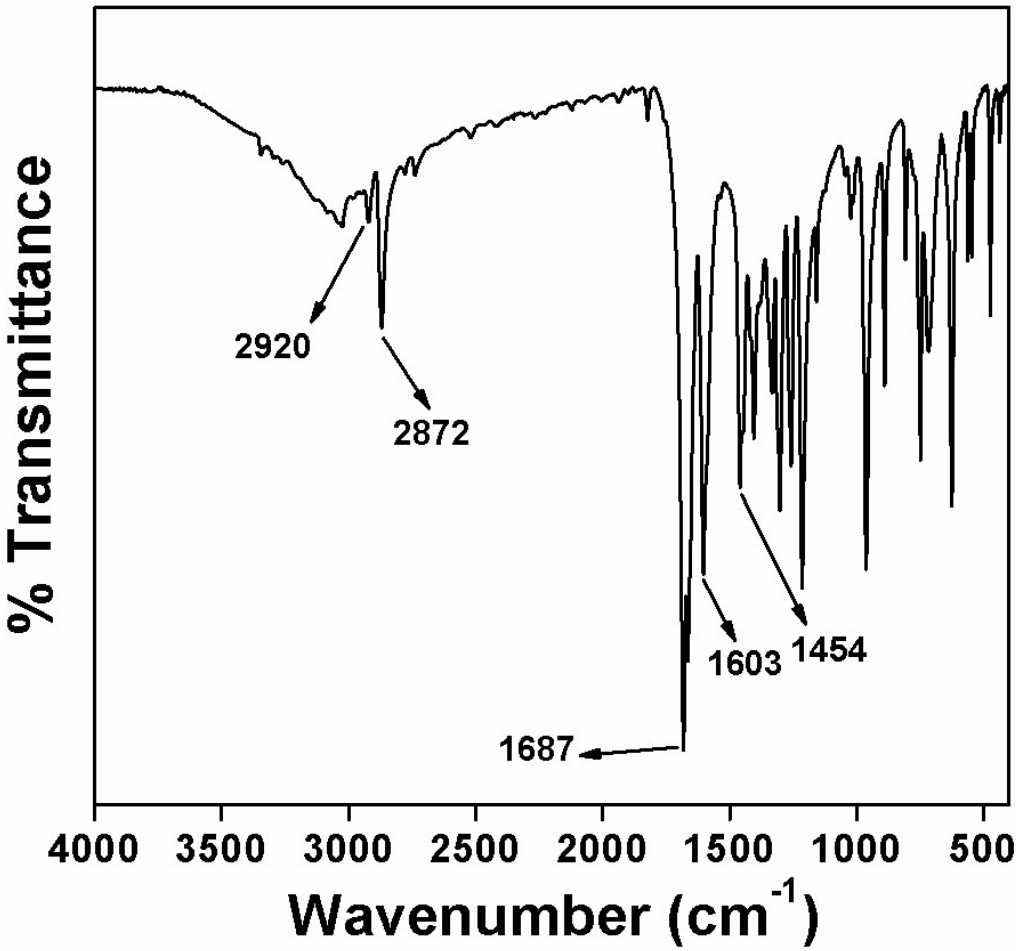
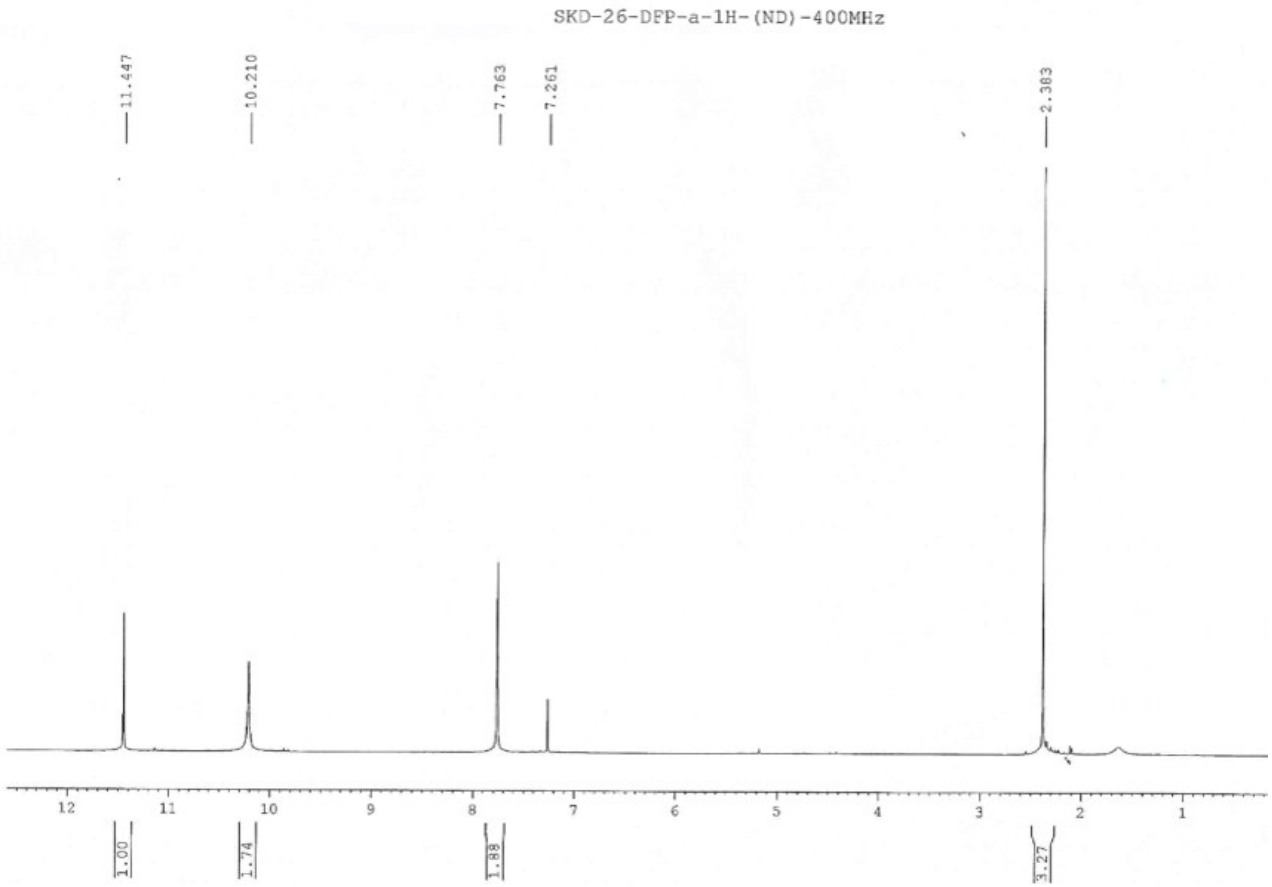
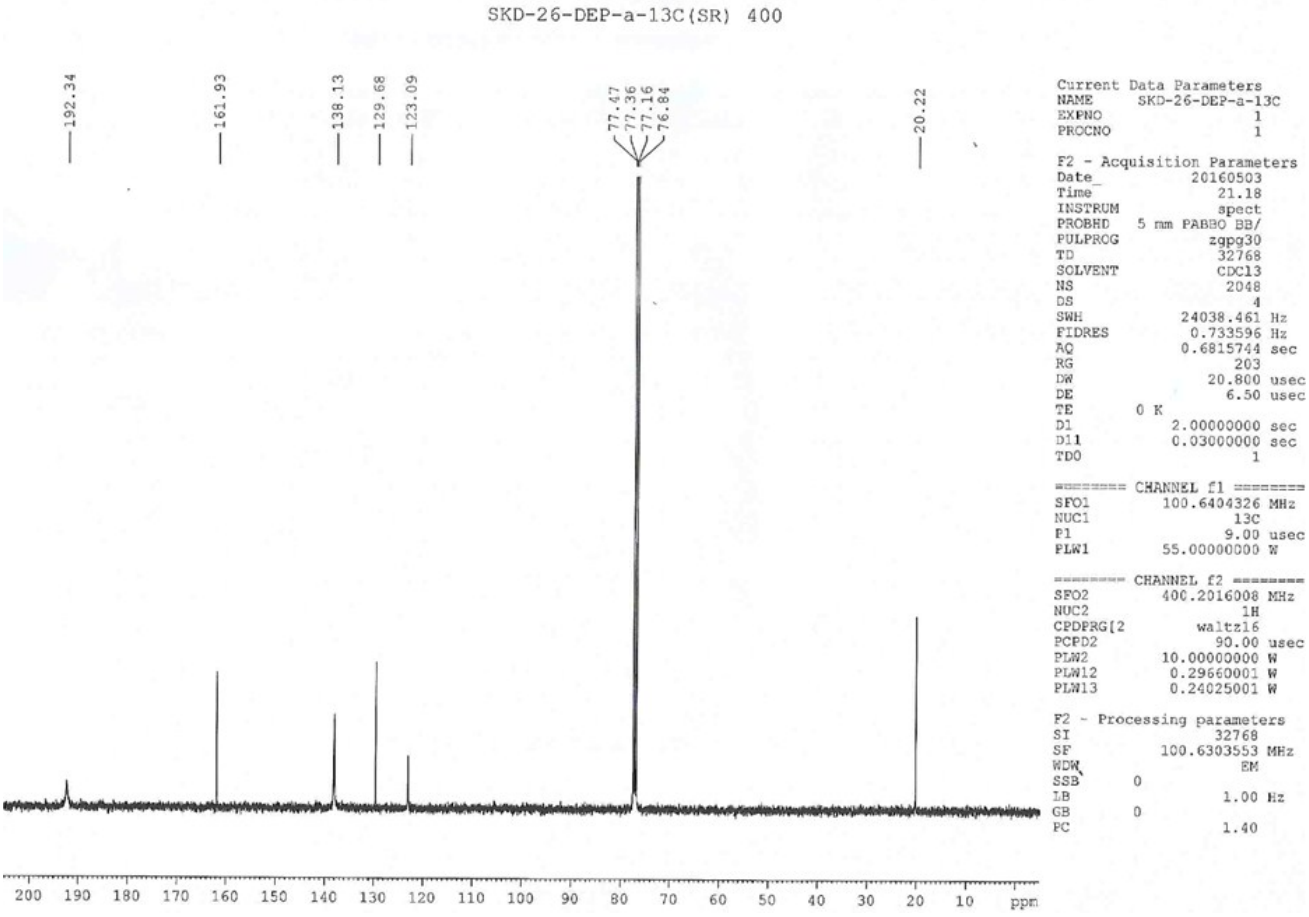


Figure S1. The FTIR spectrum of synthesized 2,6-diformyl-4-methylphenol.

Section S2: ^{1}H NMR spectrum of 2,6-diformyl-4-methylphenol



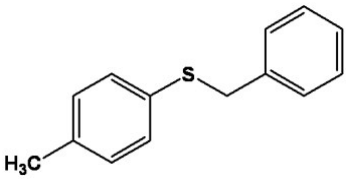
Section S3: ^{13}C NMR spectrum of 2,6-diformyl-4-methylphenol



Section S1

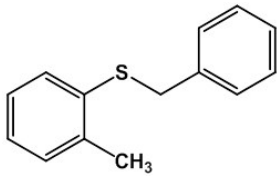
^{1}H and ^{13}C NMR spectroscopic data of various C-S coupling products

Table 1, entry 1: Benzyl 4-methylphenyl sulfide



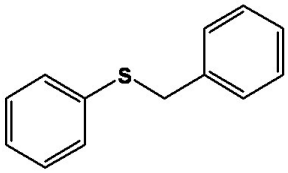
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.51-7.49 (2H, d, J=9 Hz), 7.30-7.22 (5H, m), 6.88-6.83 (2H, d, J=9 Hz), 3.57 (2H, s), 2.23 (3H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.1, 137.3, 131.5, 129.4, 128.7, 128.1, 127.0, 126.7, 35.1, 21.2.

(Table 1, entry 2): Benzyl 2-methylphenyl sulfide



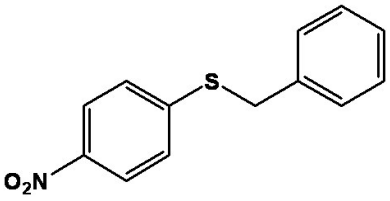
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.51-7.26 (4H, m), 7.35-7.22 (5H, m), 3.61 (2H, s), 2.65 (3H, S); ^{13}C NMR (75 MHz, $CDCl_3$) δ 137.8, 136.9, 133.3, 132.2, 128.7, 127.4, 127.3, 126.0, 125.0, 38.8, 19.9

(Table 1, entry 3): Benzyl phenyl sulfide



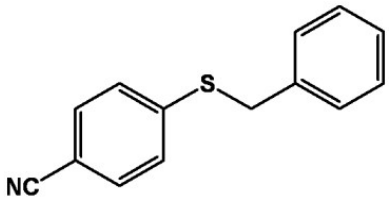
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.77-7.76 (1H, d, J=9 Hz), 7.36-7.14 (7H, m), 7.28 (2H, t), 3.65 (2H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.1, 137.7, 130.0, 129.2, 128.5, 128.7, 127.2, 126.1, 43.7.

(Table 1, entry 4): Benzyl 4-nitrophenyl sulfide



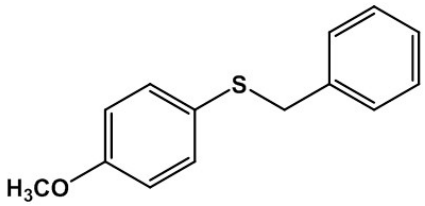
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.87-7.84 (4H, m), 7.31-7.20 (5H, m), 3.59 (2H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 147.2, 138.6, 137.3, 129.7, 128.3, 127.6, 127.0, 125.4, 35.7

(Table 1, entry 5): Benzyl 4-cyanophenyl sulfide



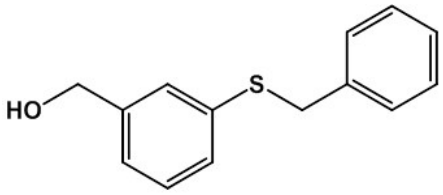
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.62-7.58 (2H, d, J=6 Hz), 7.43-7.40 (2H, d, J=6 Hz), 7.27-7.16 (5H, m), 3.56 (2H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.4, 136.9, 133.5, 129.4, 129.0, 128.9, 128.2, 127.6, 118.0, 111.2, 35.7.

Benzyl 4-methoxyphenyl sulfide (Table 1, entry 6):



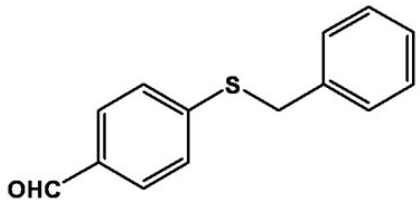
^{1}H NMR (300 MHz, $CDCl_3$) δ 7.55-7.49 (2H, d, J=9 Hz), 7.29-7.22 (5H, m), 6.68-6.63 (2H, d, J=9 Hz), 3.65 (3H, s), 3.52 (2H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 159.6, 138.1, 129.4, 128.9, 128.3, 127.0, 126.5, 116.2, 55.9, 35.8.

(Table 5, entry 7): 3-thiobenzyl Benzyl alcohol



^{1}H NMR (300 MHz, $CDCl_3$) δ 7.16-7.02 (9H, m), 4.46 (2H, s), 3.45 (2H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 143.2, 137.5, 134.6, 129.4, 128.2, 128.0, 127.6, 126.4, 126.0, 124.4, 63.6, 35.9

(Table 1, entry 9): Benzyl 4-formylphenyl sulfide



^{1}H NMR (300 MHz, $CDCl_3$) δ 9.82 (1H, s), 7.60-7.50 (3H, q), 7.22-7.10 (6H, m), 3.44 (2H, s); ^{13}C NMR (75 MHz, $CDCl_3$) δ 190.8, 138.2, 137.3, 135.0, 130.9, 129.8, 129.3, 128.1, 127.0, 35.6