

Supplementary Information

Three-dimensional Composite of Co₃O₄ Nanoparticles and Nitrogen Doped Reduced Graphene Oxide for Lignin Model Compounds Oxidation

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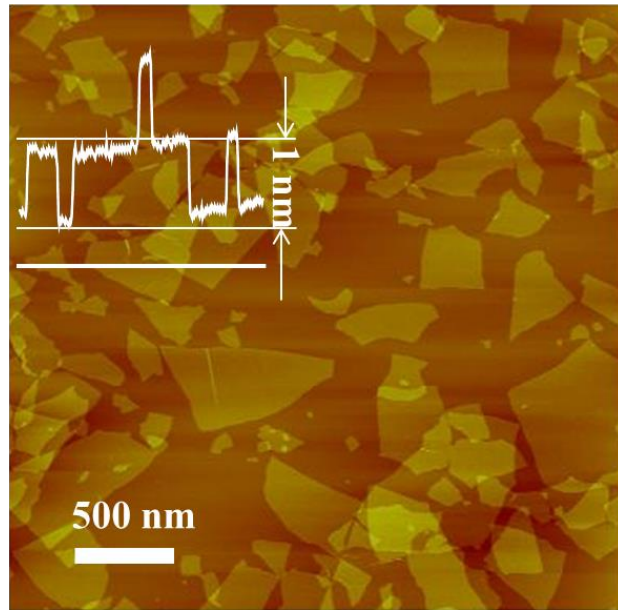


Figure S1. AFM image of the GO used in the work. Inset is the height profile of GO. The height of GO is ~ 1 nm, revealing their single atomic layer motif.

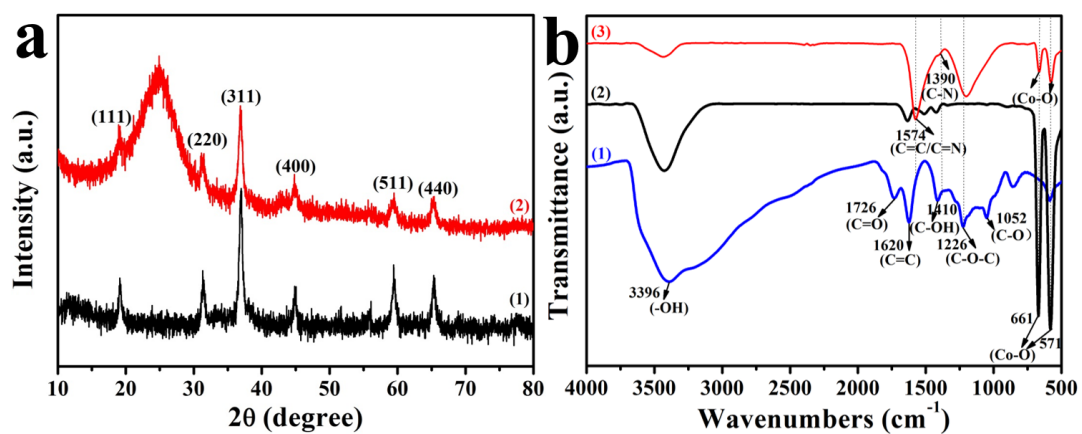


Figure S2. (a) XRD patterns of Co_3O_4 nanoparticles (1) and 3D $\text{Co}_3\text{O}_4/\text{N-rGO}$ (2), (b) FT-IR spectra of the GO (1), Co_3O_4 nanoparticles (2) and 3D $\text{Co}_3\text{O}_4/\text{N-rGO}$ (3).

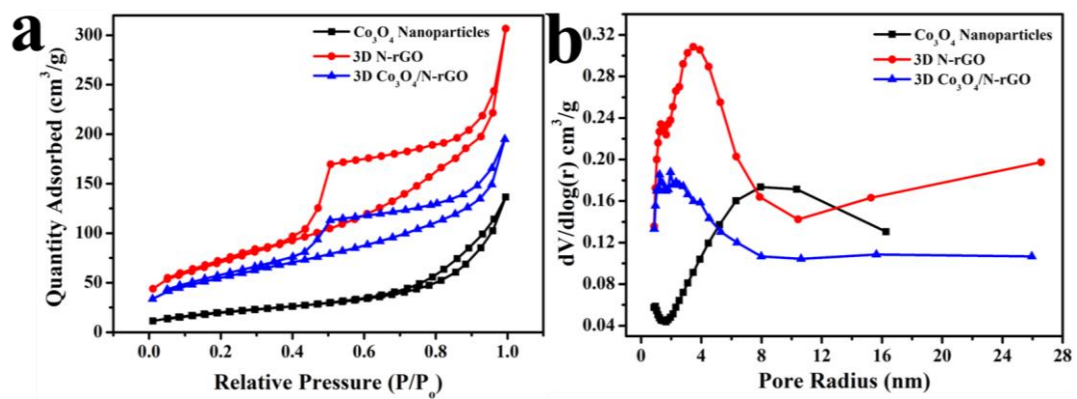


Figure S3. N_2 adsorption/desorption isotherms (a) and pore size distributions (b) of Co_3O_4 nanoparticles, 3D N-rGO and 3D $Co_3O_4/N-rGO$.

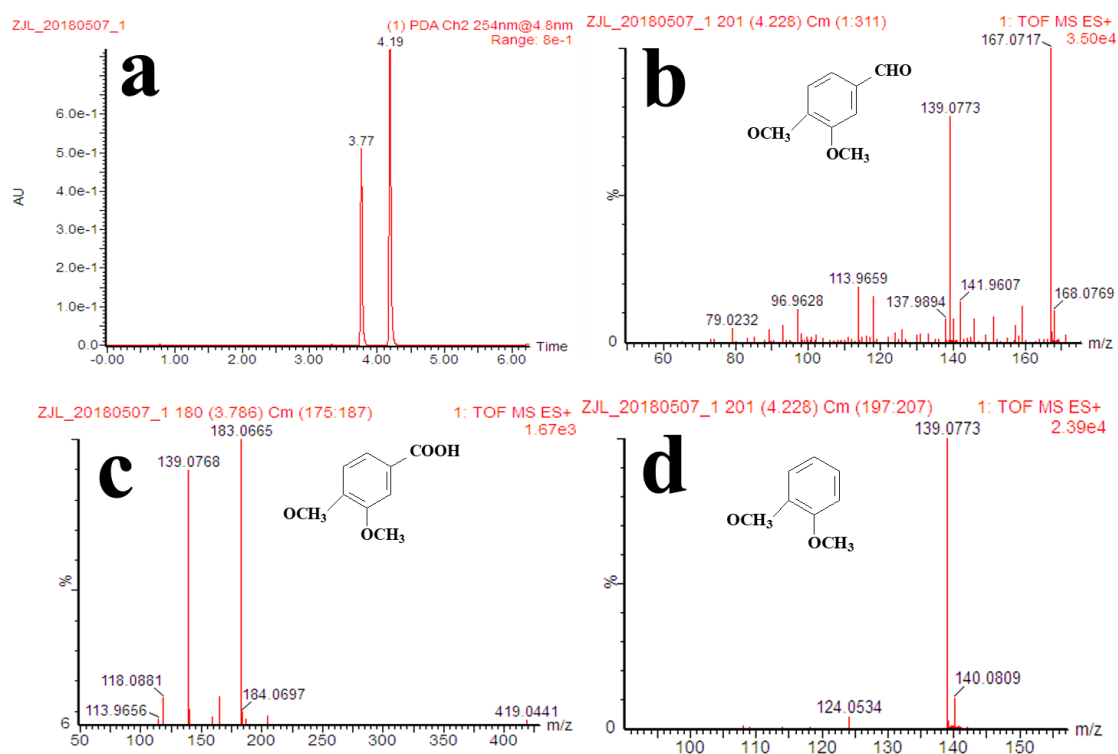


Figure S4. (a) UPLC of the oxidation product of VA. (b-d) Mass spectrum of the oxidation products of VA under ESI⁺ mode.

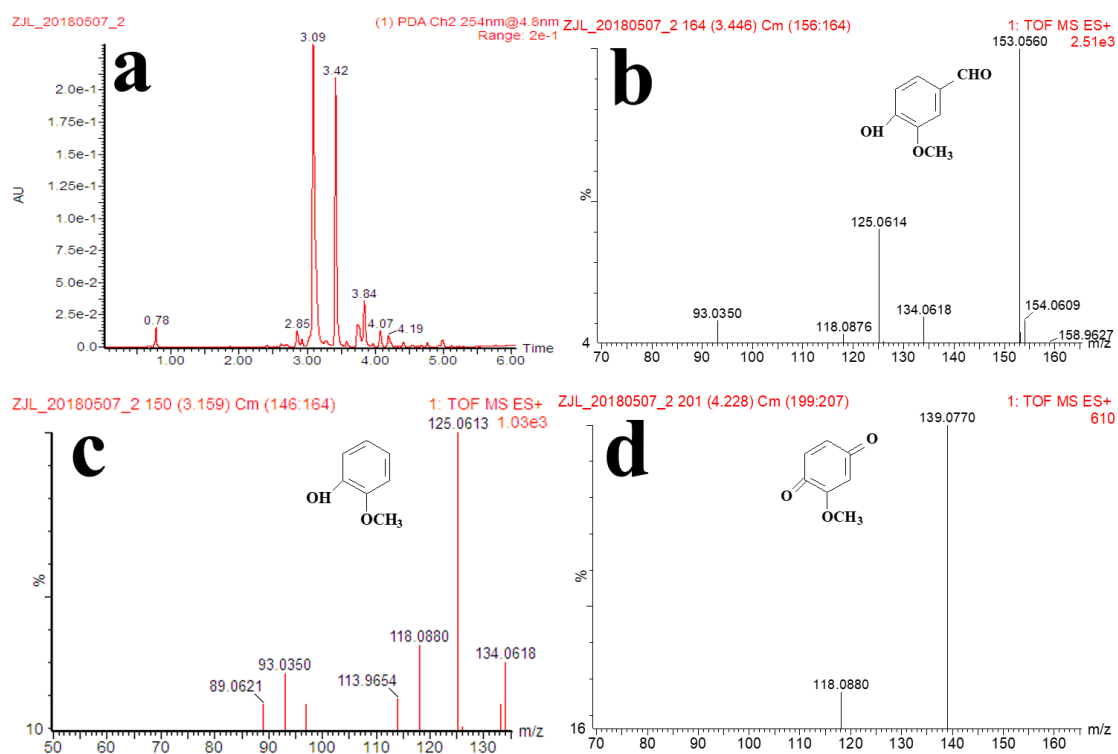


Figure S5. (a) UPLC of the oxidation product of vanillyl alcohol. (b-d) Mass spectrum of the oxidation products of vanillyl alcohol under ESI⁺ mode.

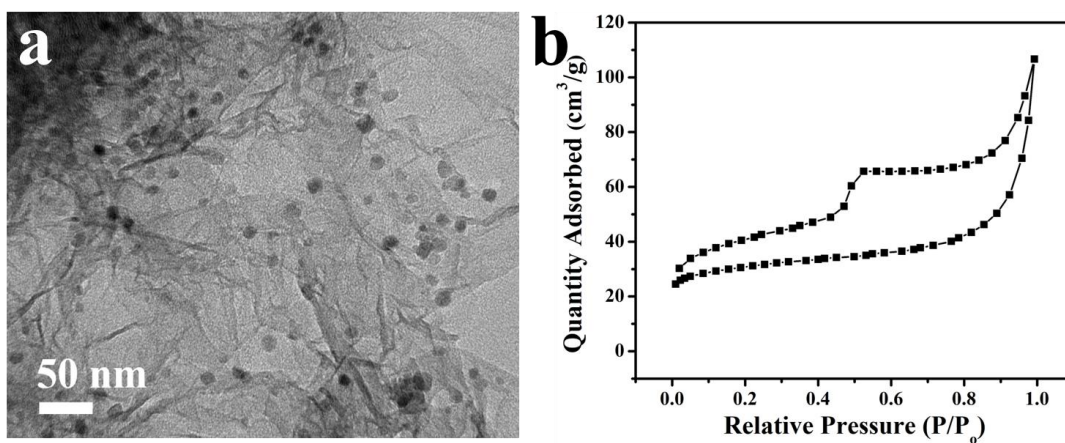


Figure S6. TEM image (a) and N₂ adsorption/desorption isotherm (b) of the 3D Co₃O₄/N-rGO after the 5th catalytic cycling runs.