Selective oxidative upgrade of waste polystyrene plastics by nitric acid to produce benzoic acid

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Fig. S1 $^1$H-NMR spectra of the product (1g PS, 10ml 20% HNO$_3$, 180 °C, 3 h).
Fig. S2 $^{13}$C-NMR spectra of the product (1g PS, 10ml 20% HNO$_3$, 180 °C, 3 h).
Fig. S3 GC-MS spectra of pure benzoic acid oxidation process (1g benzoic acid, 10ml 20% HNO₃, 180 °C).
Fig. S4 Reddish brown gas generated after the reaction.
Fig. S5 FTIR spectra of the gas collected after the reaction (CO$_2$ and H$_2$O are impurity peaks generated during the detection process).
Fig. S6 $^1$H-NMR spectra of 2,4-Diphenylpentane.
Fig. S7 LC-MS report of 2,4-Diphenylpentane.
Fig. S8 $^{13}$C-NMR spectra of oxidative upgrade of 2,4-Diphenylpentane (0.1g 2,4-Diphenylpentane, 3ml 20% HNO$_3$, 180 °C, 10 min).
Fig. S9 GC/MS spectra of the solid residue generated after oxidative upgrade of the cup lids.