## Supplementary Information:

## The Controlled Catalytic Oxidation of Furfural to Furoic acid using AuPd/Mg(OH)2

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**Figure S.1.** X-ray diffraction patterns for (a) MgO support and (b) 1 % AuPd/Mg(OH)<sub>2</sub>. MgO periclase  $\bullet$ , Mg(OH)<sub>2</sub> brucite  $\blacktriangle$ .



**Figure S.2.** X-ray diffraction patterns for (a) the fresh AuPd/Mg(OH)<sub>2</sub> catalyst (b) the AuPd/Mg(OH)<sub>2</sub> catalyst after calcination at 673 K for 2 h. MgO periclase  $\bullet$ , Mg(OH)<sub>2</sub> brucite  $\blacktriangle$ .

![](_page_1_Figure_2.jpeg)

**Figure S.3.** X-ray diffraction patterns for (a) the fresh  $AuPd/Mg(OH)_2$  (b) after one use, (c) after two uses, (d) after three uses and (e) after four uses.

![](_page_2_Figure_0.jpeg)

Figure S.4. The effect of NaOH concentration on the initial rate of the polymerisation pathway.

![](_page_2_Figure_2.jpeg)

**Figure S.5.** Reveals the orders of reaction with respect to each reactant for the Cannizzaro reaction. Reactants are as follows: S.2(a)  $\diamond$  Furfural,  $\blacktriangle$  NaOH and S.2(b)  $\circ$  O<sub>2</sub> (Dissolved concentration calculated using Henry's law. **Reaction Conditions:** 303 K, reaction volume (10 mL), reaction time (300 s).

**Table S.1.** Elemental analysis of the post reaction effluent for a reaction under standard reaction conditions

 (SD) and a reaction under base free condition (BF).

Reaction	Mg Concentration (ppm)	Mass of Mg Dissolved (mg)	Mg Leached from Catalyst (%)
AuPd/Mg(OH) <sub>2 (BF)</sub>	782.5	7.83	8.68
AuPd/Mg(OH) <sub>2 (SD)</sub>	5.0	0.050	0.06