

## Supplementary Materials

### **TiO<sub>2</sub> catalyzed dihydroxyacetone (DHA) conversion in water: evidences that this model reaction probes basicity in addition to acidity**

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**Table S1: TiO<sub>2</sub> samples' impurities quantified by X Fluorescence analysis (wt%)**

impurities	P	Cl	Si	S	C
P25	0.09	<b>0.17</b>	-	-	-
P90	0.09	<b>0.20</b>	-	-	-
UV100	0.22	0.01	0.02	<b>0.11</b>	-
HPX-200/v2	0.10	0.07	0.01	-	-
Ru160	0.26	-	<b>5.00</b>	<b>0.32</b>	<b>1.61</b>
HPX-400C	0.10	0.07	0.01	-	-

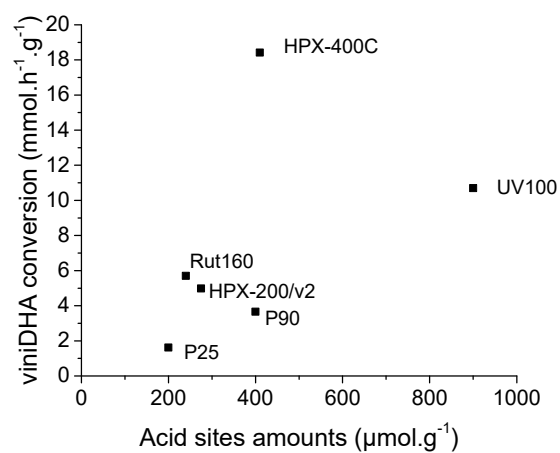


Figure S1. Initial rate of DHA conversion as a function of  $\text{TiO}_2$ 's acid sites amount determined in gas phase.

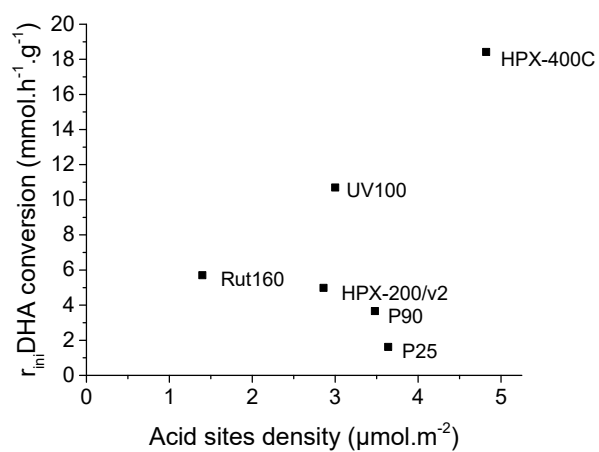


Figure S2. Initial rate of DHA conversion as a function of  $\text{TiO}_2$ 's acid sites density determined in gas phase.

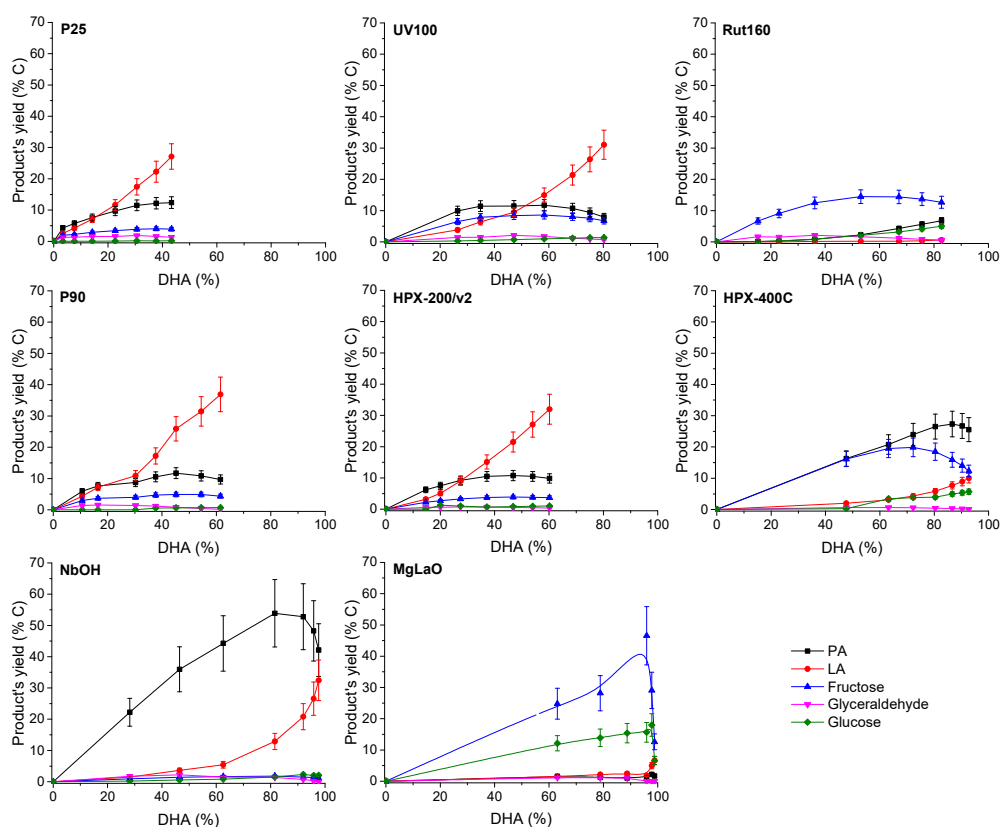


Figure S3. Evolution of products' yields with DHA conversion in the presence of the six  $\text{TiO}_2\text{s}$ , NbOH and MgLaO. Conditions:  $T = 90^\circ\text{C}$ ,  $P_{\text{air}} = 1\text{ atm}$ ,  $V_{\text{water}} = 200\text{ mL}$ ,  $[\text{DHA}] = 0.1\text{ mol.L}^{-1}$ ,  $[\text{catalyst}] = 10\text{ g.L}^{-1}$ .

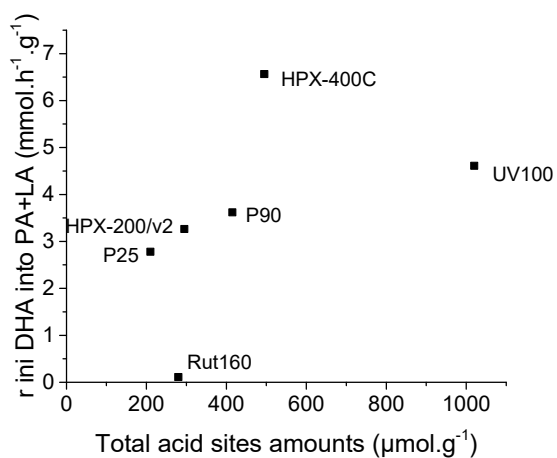


Figure S4. Initial rate of pyruvaldehyde (PA) and lactic acid (LA) formation as a function of  $\text{TiO}_2$ 's acid sites amount determined in gas phase.

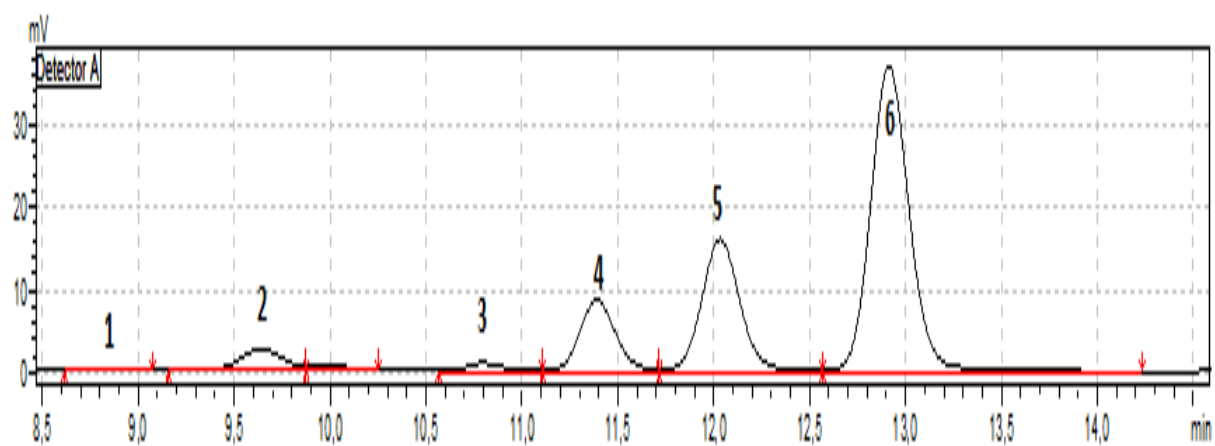


Figure S5. HPLC Chromatograph of products after reaction for 400 minutes catalyzed by P25 (1: glucose, 2: fructose, 3: glyceraldehyde, 4: pyruvaldehyde, 5: lactic acid, 6: dihydroxyacetone).