

Supporting Information

One-pot sol-gel synthesis of phosphated TiO₂ catalyst for conversion of monosaccharide, disaccharides, and polysaccharides to 5-hydroxymethylfurfural

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Table S1. Surface atomic composition of the 15P-TiO₂ catalyst determined by XPS

Catalyst	Surface atomic composition (%)			
	Ti	P	O	C
15P-TiO ₂ -Fesh	17.0	9.1	63.5	9.4
15P-TiO ₂ -Spent	16.2	7.8	64	11.1

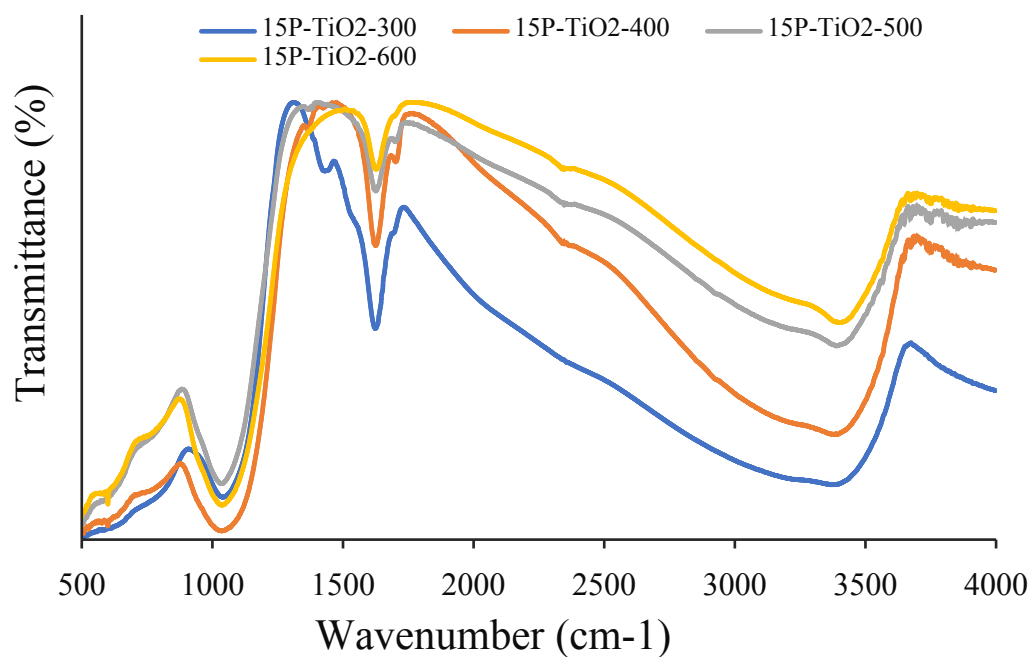


Figure S1. FT-IR spectra of 15P-TiO₂ catalyst calcined at various temperatures

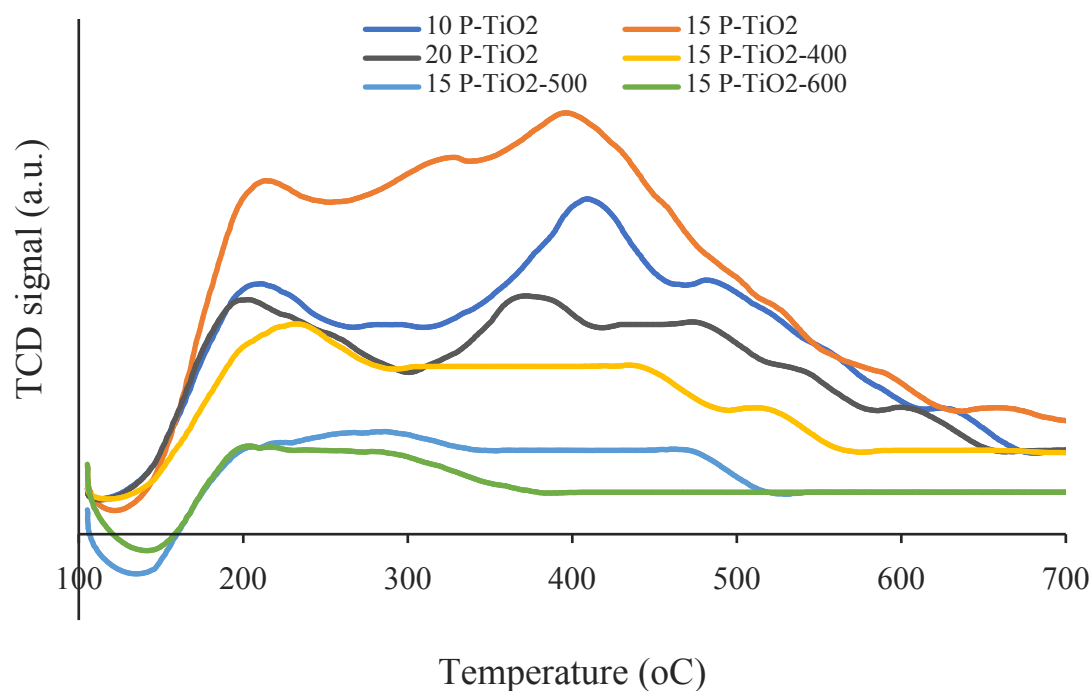


Figure S2. NH₃-TPD pattern of different TiO₂ catalysts

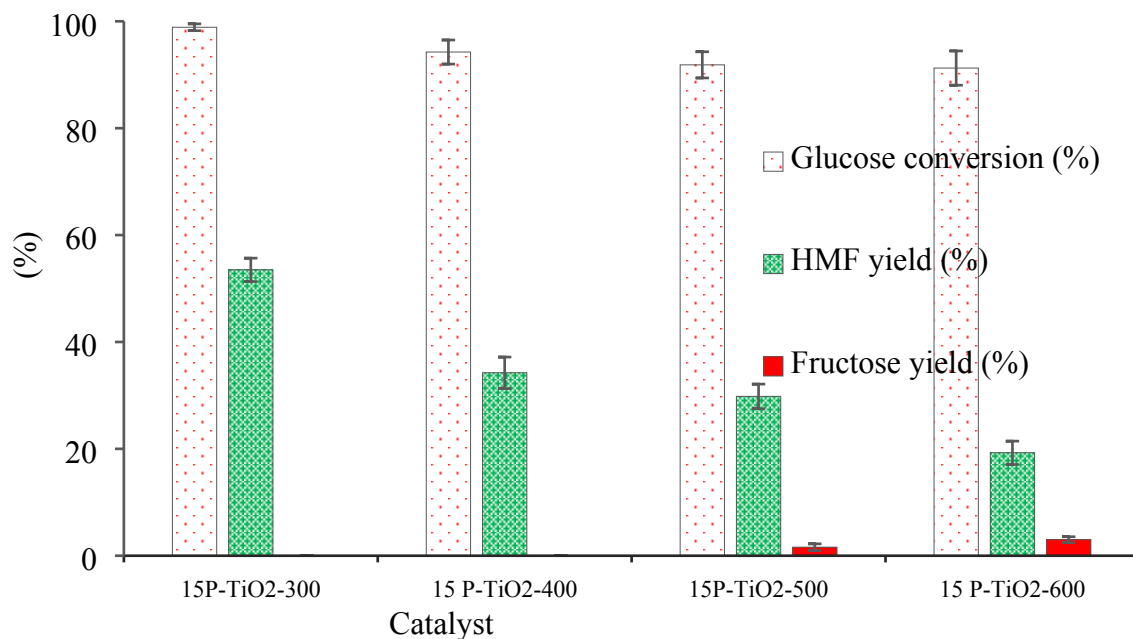


Figure S3. Effect of calcination temperature for the 15P-TiO₂ catalyst on dehydration of glucose. Other reaction conditions: glucose/catalyst 4:1 w/w, NaCl 0.525 g, water 3 mL, THF 12 mL, 175°C, 2h.

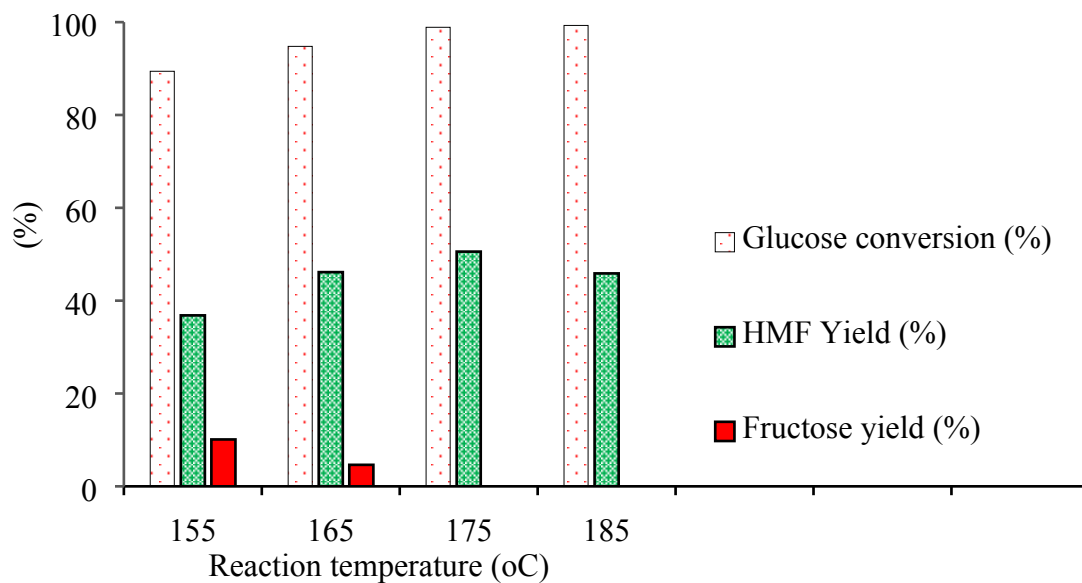


Figure S4. Effects of reaction temperature on glucose dehydration over 15P-TiO₂ catalyst. Other reaction conditions: glucose/catalyst 4:1 w/w, NaCl 0.525 g, water 3 mL, THF 12 mL, 175°C, 2h.

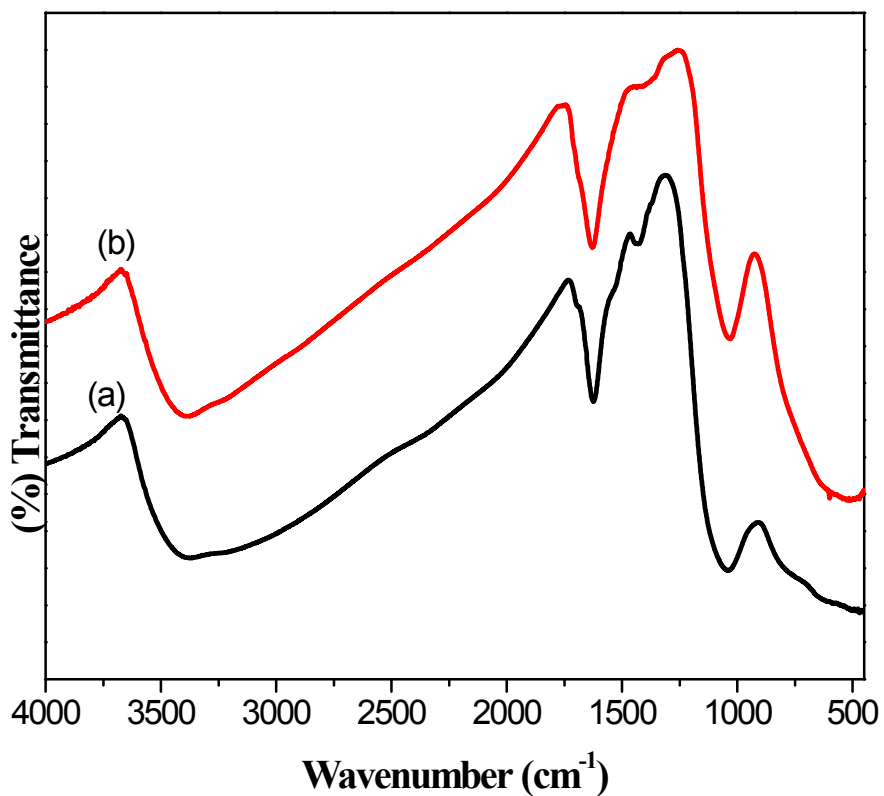


Figure S5. FT-IR spectra of (a) 15P-TiO₂ (Fresh) and (b) 15P-TiO₂ (spent) catalysts

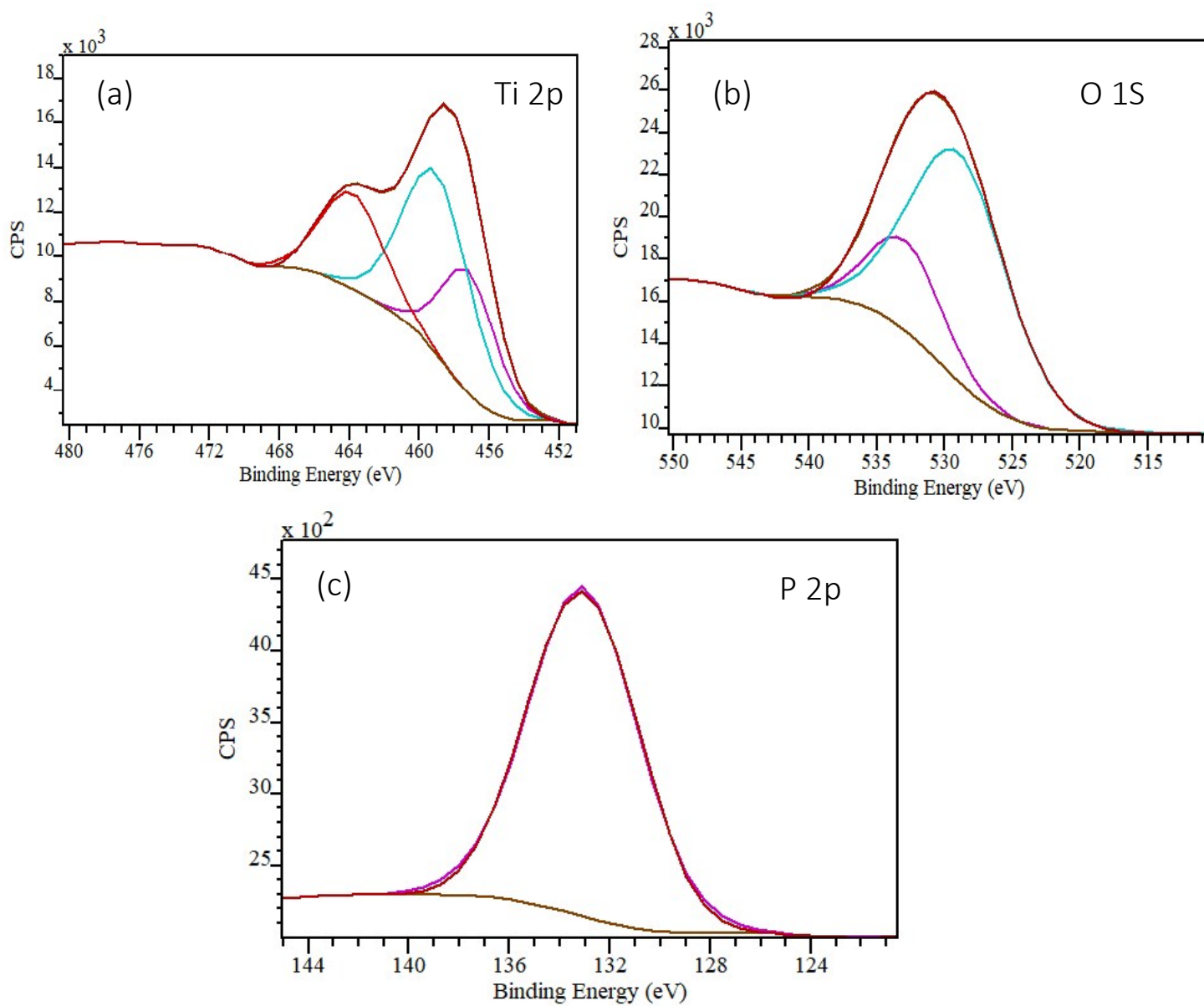


Figure S6. The XPS spectra of 15P-TiO₂ spent catalyst (a) Ti 2p; (b) O 1s; and (c) P 2p

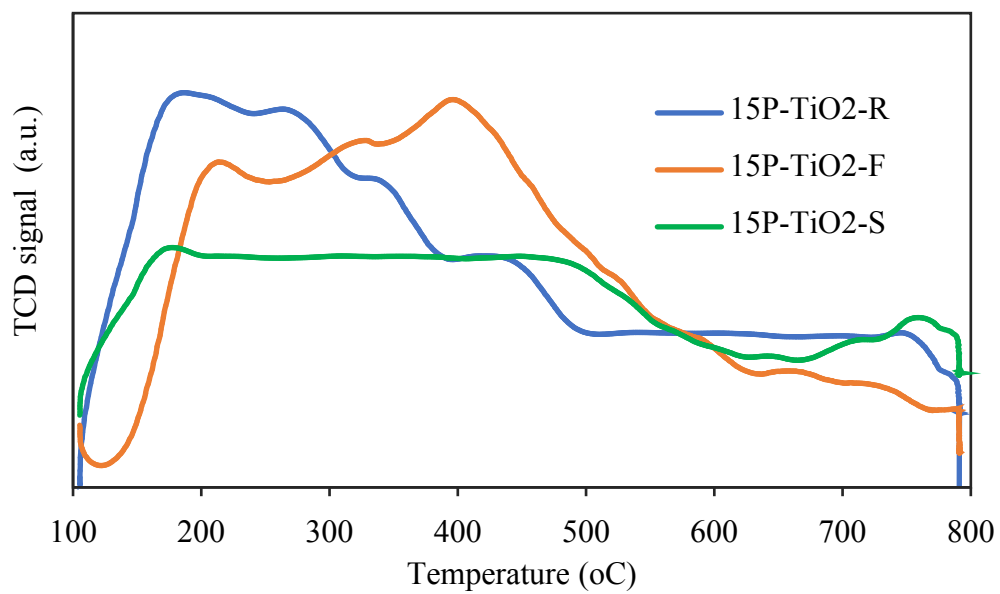


Figure S7. NH₃-TPD pattern of fresh, spent and regenerated 15P-TiO₂ catalyst