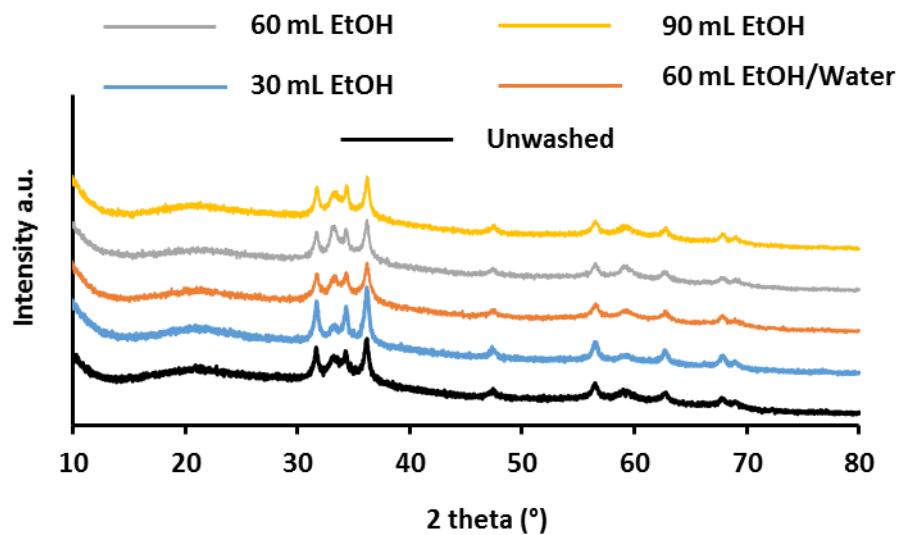
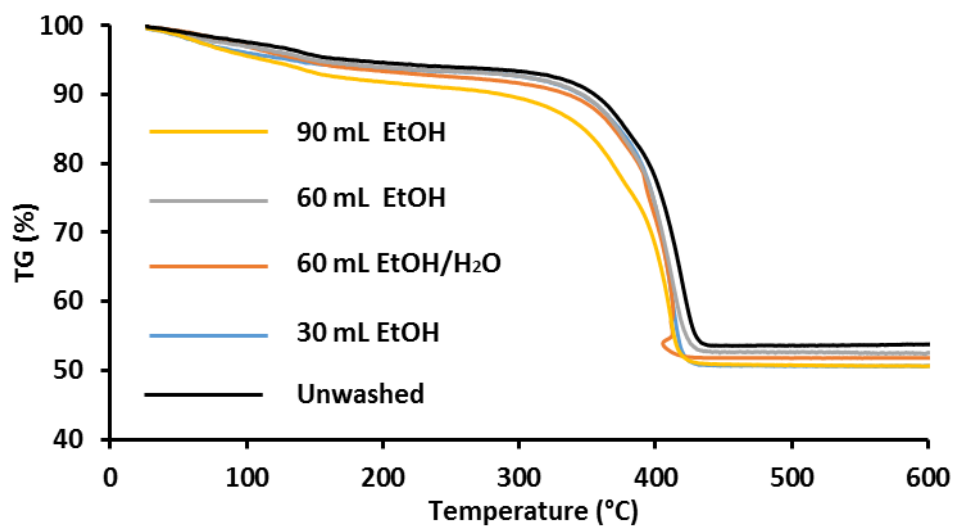


## Supplementary Material

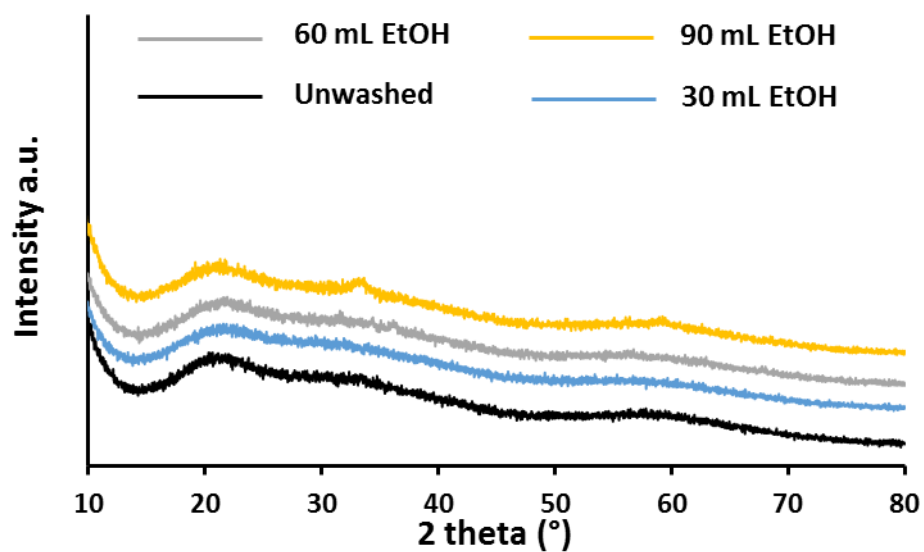
### ” Self-assembled hybrid ZnO nanostructures as supports for copper-based catalysts in the hydrogenolysis of glycerol ”



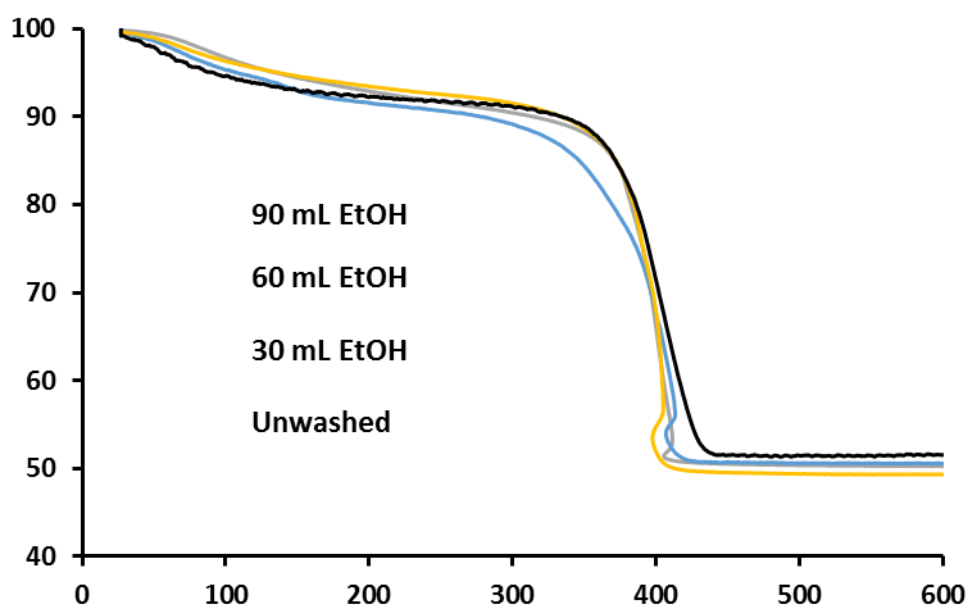
**Figure S1.** XRD patterns of ZnO/PAA2 using different washing



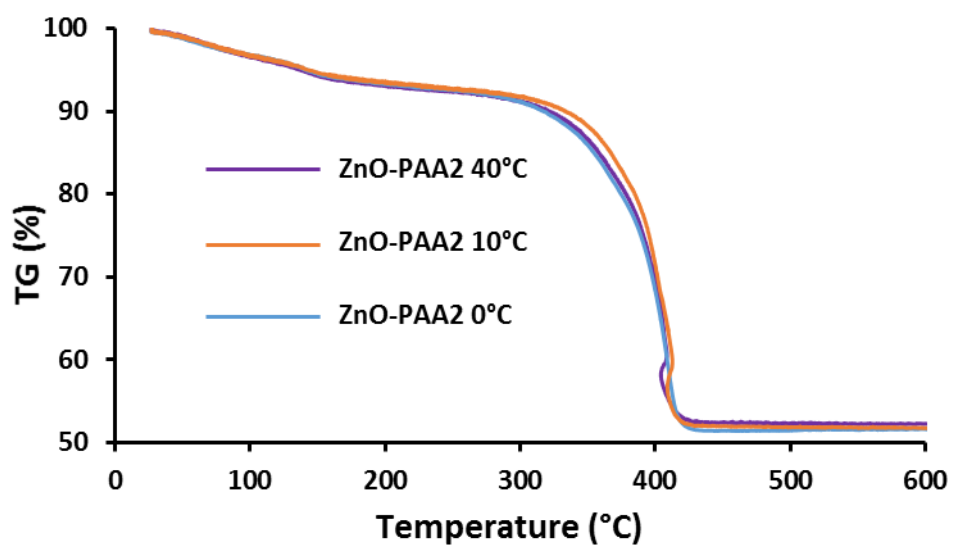
**Figure S2.** TGA curves of ZnO/PAA2 using different washing



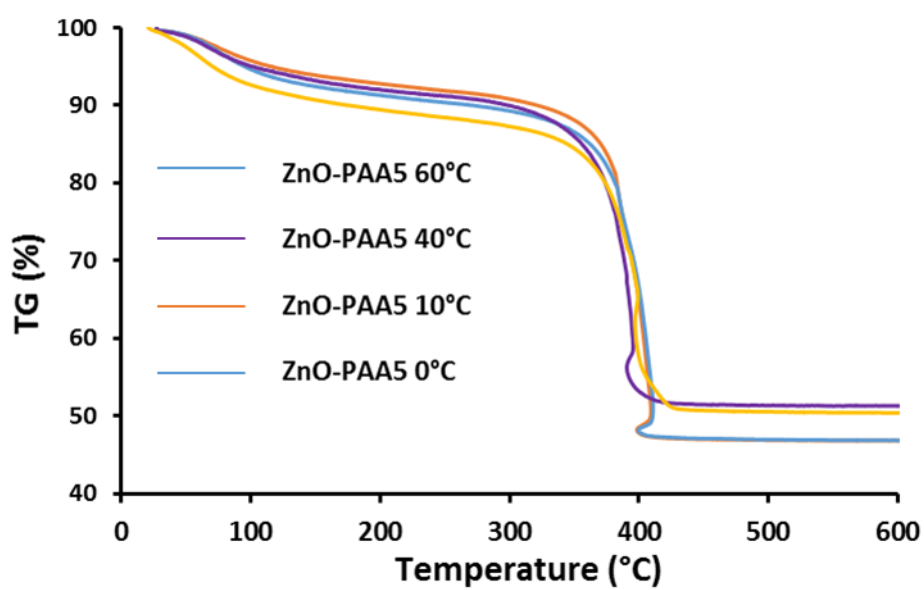
**Figure S3.** XRD diffraction patterns for ZnO/PAA5 washed with different volume of EtOH



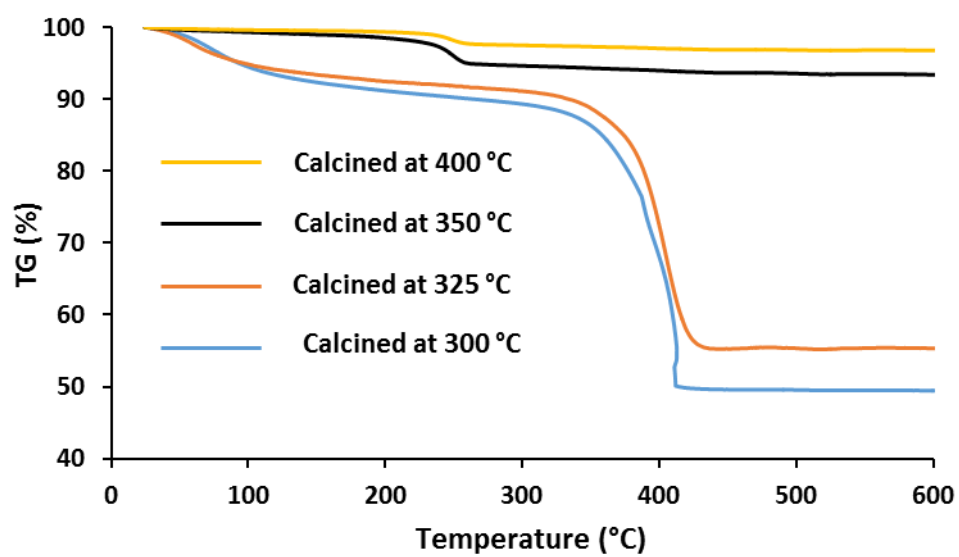
**Figure S4.** TGA curves for ZnO/PAA5 washed with different volume of EtOH



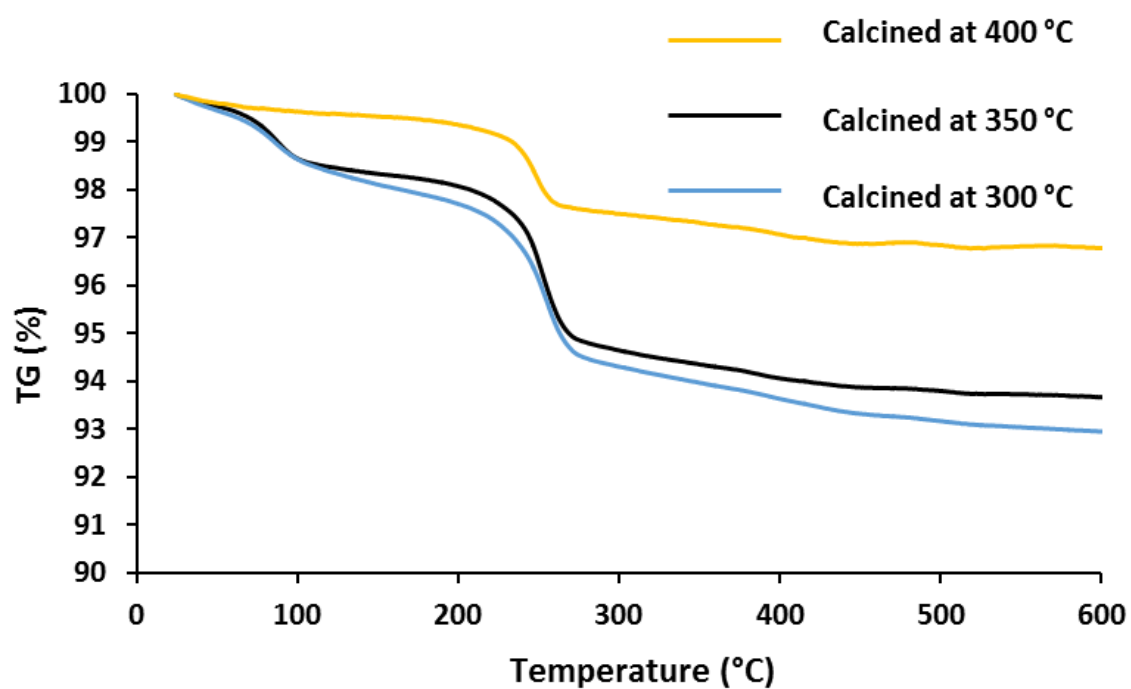
**Figure S5.** TGA curves for ZnO/PAA2 synthesized at different temperature



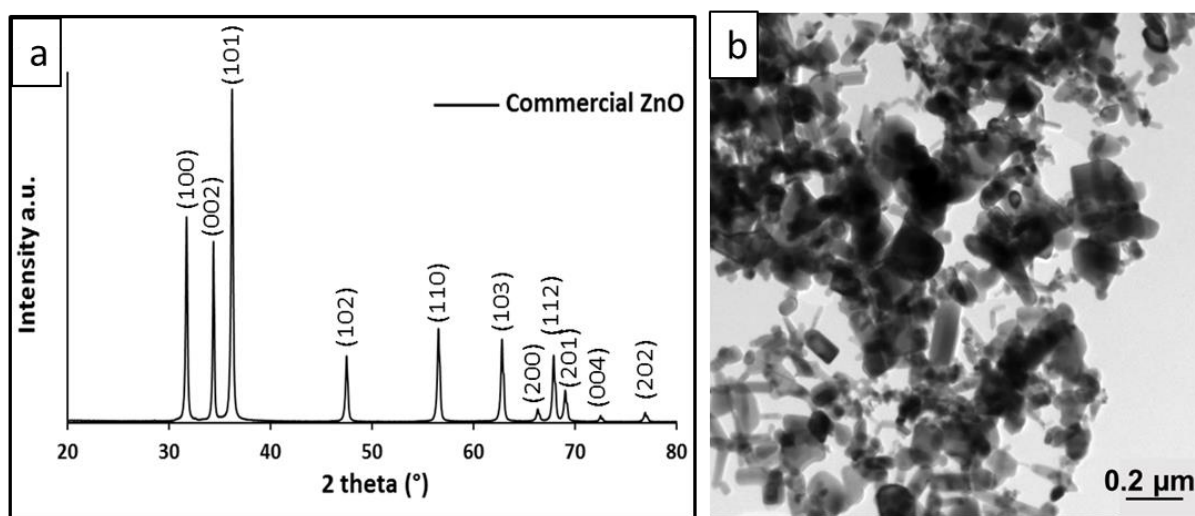
**Figure S6.** TGA curves of ZnO/PAA5 synthesized at different temperature



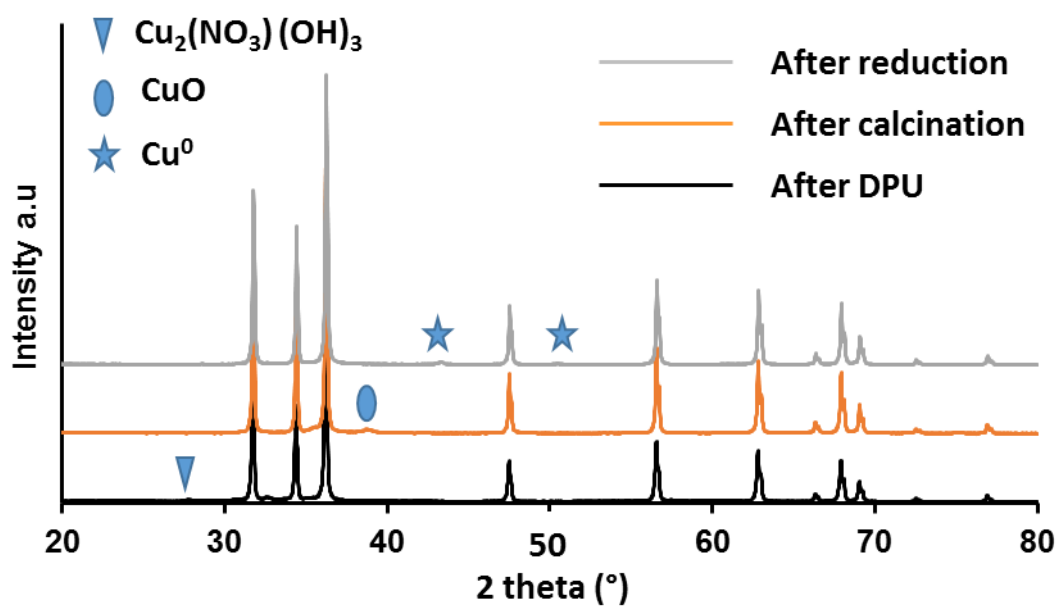
**Figure S7.** TGA curves for ZnO/PAA2 calcined at different temperatures



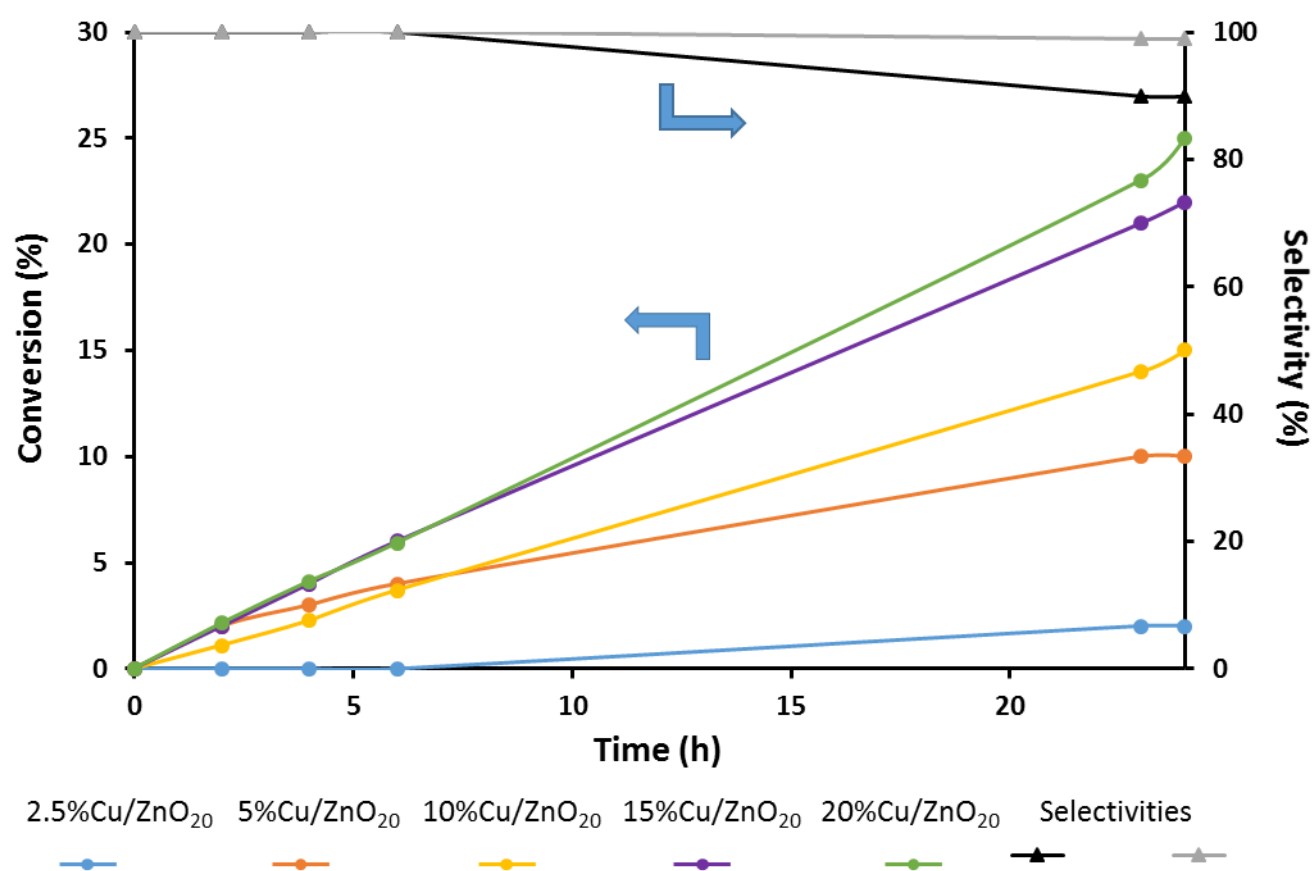
**Figure S8.** TGA curves for ZnO/PAA5 calcined at different temperatures



**Figure S9.** (a) XRD diffraction pattern and (b) TEM images of commercial ZnO



**Figure S10.** Representative XRD diffraction patterns of 5%Cu/ZnO<sub>20</sub> at different stage of the synthesis



**Figure S11.** Conversion and selectivity in function of time for Cu supported on commercial ZnO with different copper weight percentage. Grey curve: selectivity for 2.5%Cu/ZnO<sub>20</sub>; black curve: selectivity for the other catalysts

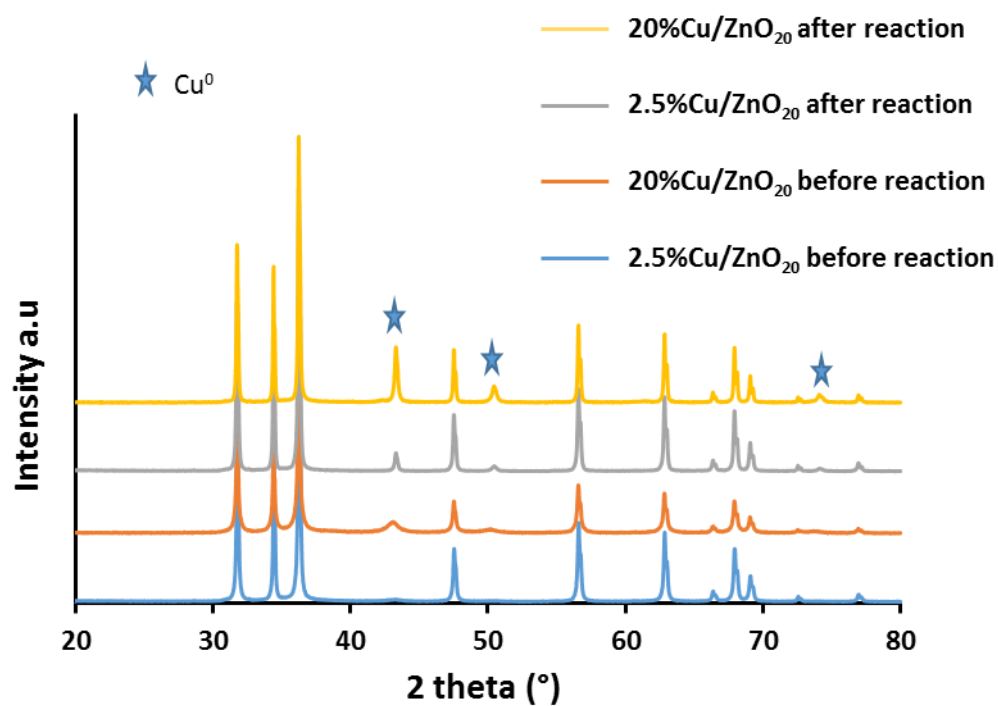


Figure S12. XRD patterns of 2.5%Cu/ZnO<sub>20</sub> and 20%Cu/ZnO<sub>20</sub> before and after reaction

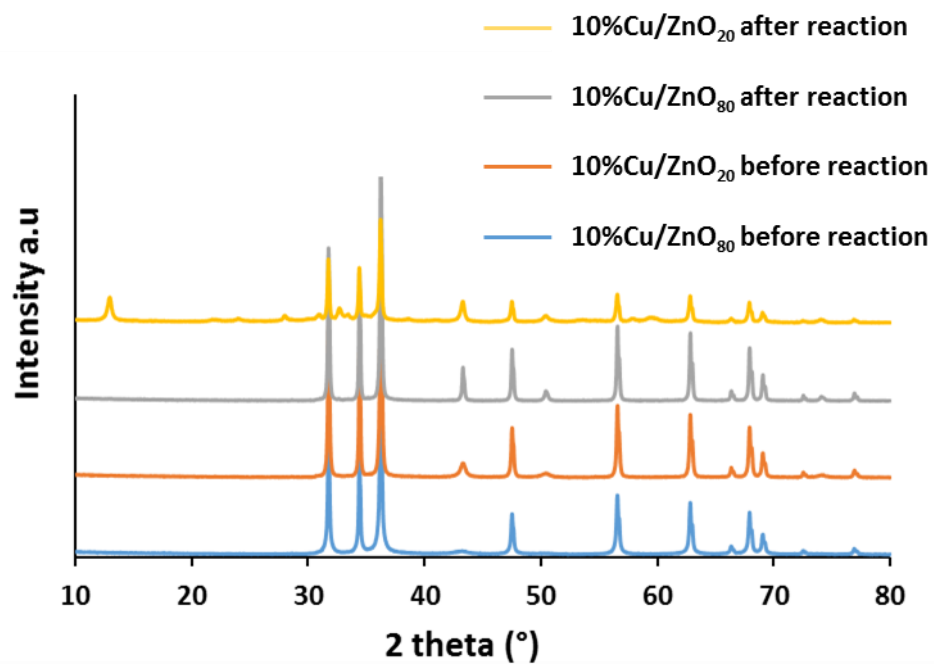
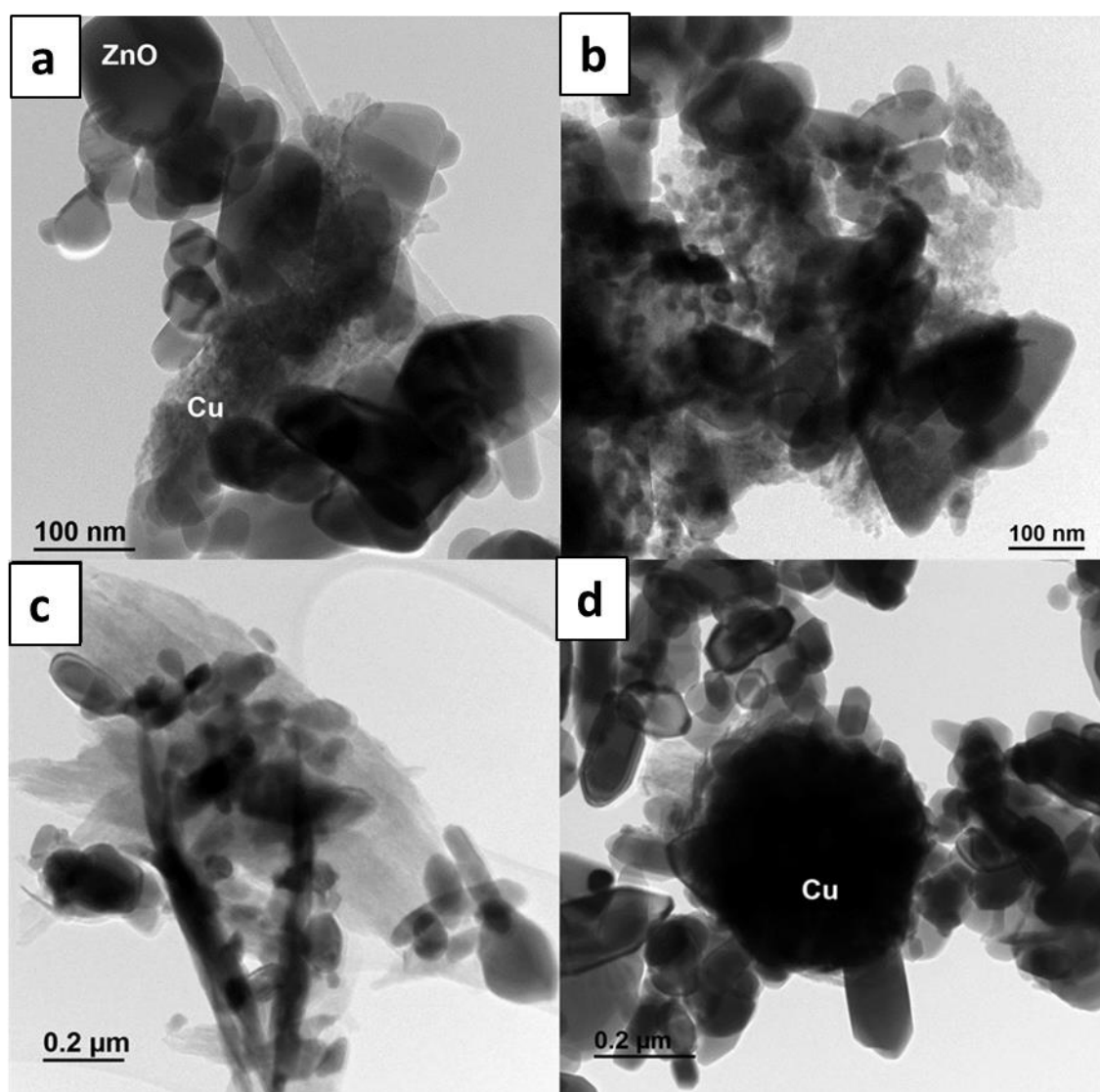
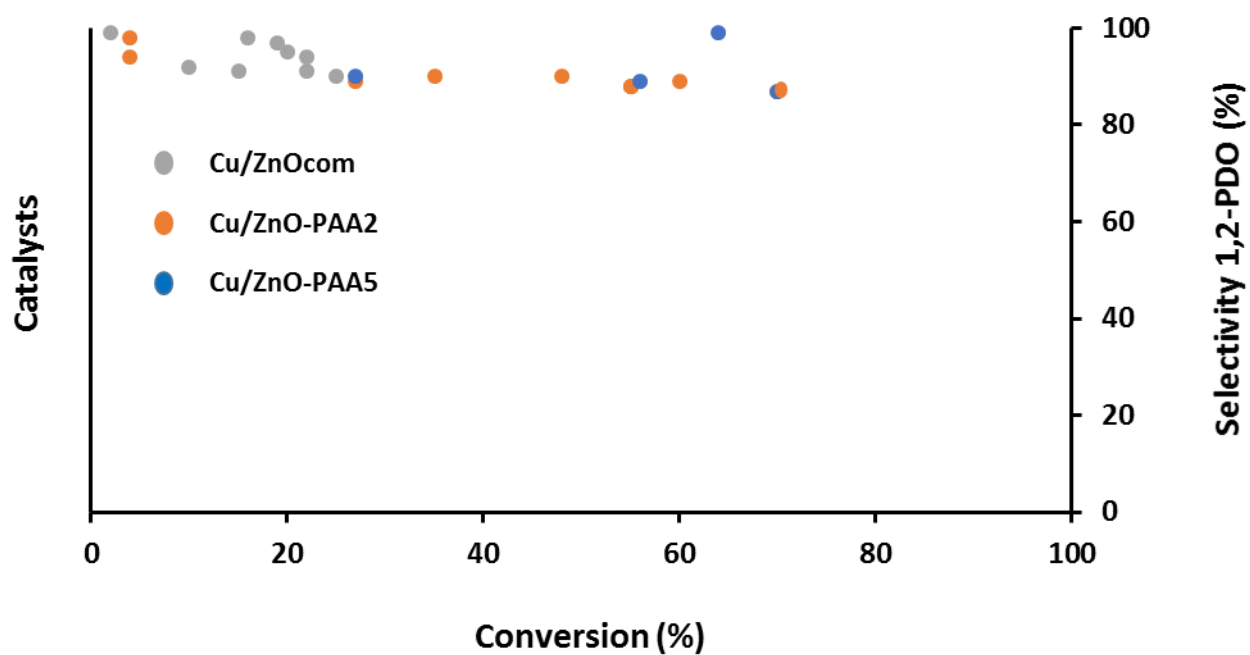


Figure S13. XRD patterns of 10%Cu/ZnO<sub>20</sub> and 10%Cu/ZnO<sub>80</sub> before and after reaction

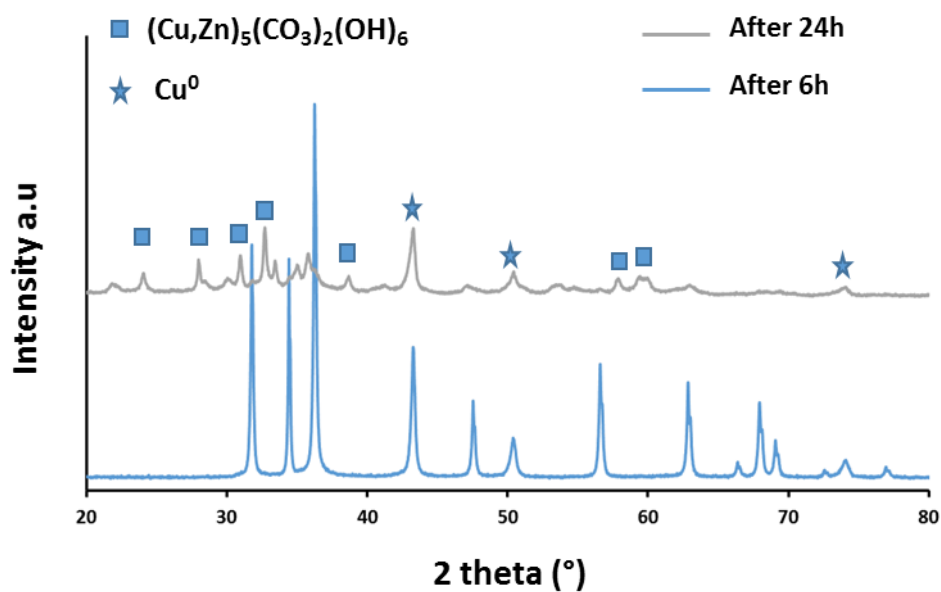


**Figure S14.** TEM images of 10%Cu/ZnO<sub>20</sub> (a, c) and 10%Cu/ZnO<sub>80</sub> (b, d) before (a, b) and after (b, d) reaction

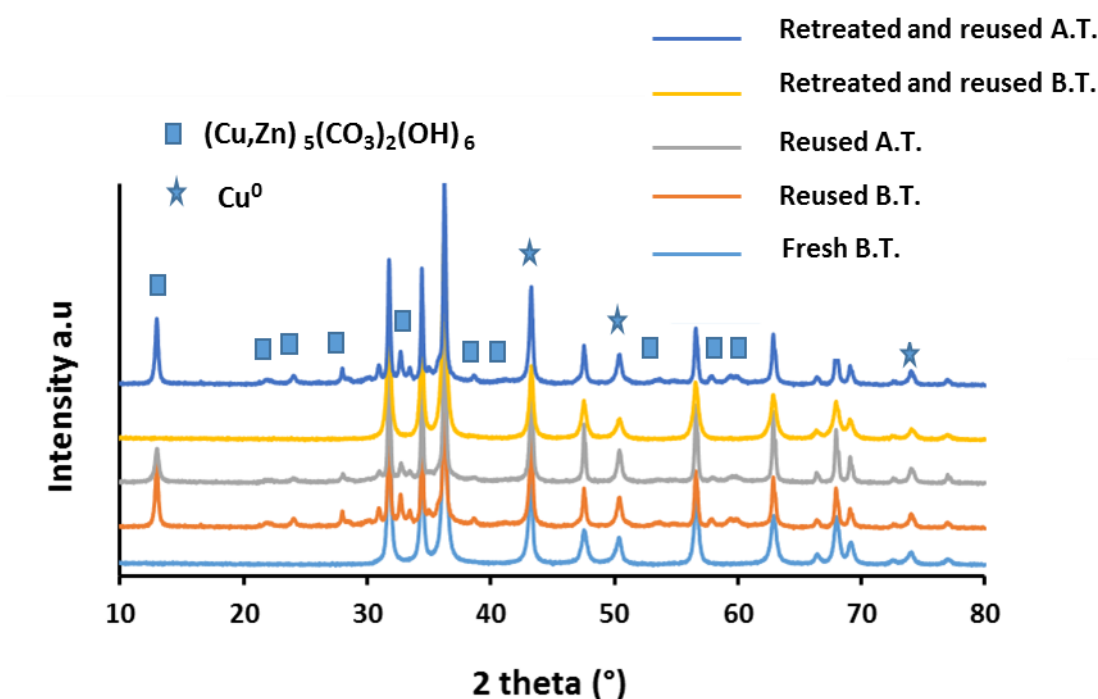




**Figure S15.** Selectivity towards 1,2-propanediol, in function of conversion.



**Figure S16.** XRD patterns of the fresh 20%Cu/ZnO-PAA2<sub>0-NC</sub>, after 6 h and 24 h reaction



**Figure S17.** XRD patterns of the fresh and reused catalysts (20%Cu/ZnO-PAA2<sub>0-NC</sub>). (B.T. : before test and A.T. : after test)

**Table S1.** Cu/Zn molar ratios, amount of 1,2-PDO produced per mol of Cu and initial rates ( $V_0$ ) associated with Cu supported on commercial ZnO

Entry	Catalysts <sup>a</sup>	$n_{Cu}/n_{Zn}$ <sup>b</sup>	$R_{1,2-PDO}$ ( $mol_{1,2-PDO} mol_{Cu}^{-1}$ ) <sup>c</sup>	$V_0$ ( $mmol_{glycerol} mol_{Cu}^{-1} h^{-1}$ )
1	2.5%Cu/ZnO <sub>20</sub>	0.03	2.2	107
2	5%Cu/ZnO <sub>20</sub>	0.07	5.6	231
3	10%Cu/ZnO <sub>20</sub>	<b>0.14</b>	<b>6.8</b>	<b>290</b>
4	15%Cu/ZnO <sub>20</sub>	0.24	3.8	165
5	20%Cu/ZnO <sub>20</sub>	0.30	2.1	91
6	10%Cu/ZnO <sub>5</sub>	0.16	4.9	208
7	10%Cu/ZnO <sub>10</sub>	0.15	5.4	235
8	10%Cu/ZnO <sub>40</sub>	0.15	5.9	259
9	10%Cu/ZnO <sub>80</sub>	0.13	5.0	209

<sup>a</sup> The first number refer to the Cu loading; the subscript refer to  $[Cu^{2+}]$  concentration

<sup>b</sup> Cu/ZnO molar ratio, based on ICP analysis

<sup>c</sup> Amount of 1,2-PDO produced per mol of Cu, in 24 h

**Table S2.** Cu/Zn molar ratios and amount of 1,2-PDO produced per mol of Cu associated with Cu/ZnO/PAAx

Entry	Catalysts <sup>a</sup>	$n_{\text{Cu}}/n_{\text{Zn}}$ <sup>b</sup>	$R_{1,2\text{-PDO}}$ ( $\text{mol}_{1,2\text{ PDO}} \text{mol}_{\text{Cu}}^{-1}$ ) <sup>c</sup>
1	5%Cu/ZnO/PAA2 <sub>0-NC</sub>	0.07	2.1
2	10%Cu/ZnO/PAA2 <sub>0-NC</sub>	0.15	12.5
3	20%Cu/ZnO/PAA2 <sub>0-NC</sub>	0.31	9.3
5	40%Cu/ZnO/PAA2 <sub>0-NC</sub>	0.78	0.3
6	20%Cu/ZnO/PAA2 <sub>10-NC</sub>	0.34	7.5
7	20%Cu/ZnO/PAA2 <sub>20-NC</sub>	0.34	6.7
8	20%Cu/ZnO/PAA2 <sub>40-NC</sub>	0.34	3.4
9	20%Cu/ZnO/PAA5 <sub>0-NC</sub>	0.39	8.1
10	20%Cu/ZnO/PAA5 <sub>20-NC</sub>	0.33	8.8
11	20%Cu/ZnO/PAA5 <sub>40-NC</sub>	0.32	7.4
12	20%Cu/ZnO/PAA2 <sub>20-C400</sub>	0.36	6.5
13	20%Cu/ZnO/PAA5 <sub>20-C300</sub>	0.26	4.2

<sup>a</sup> The first number refer to the Cu loading; the subscript refer to  $[\text{Cu}^{2+}]$  concentration

<sup>b</sup> Cu/ZnO molar ratio, based on ICP analysis

<sup>c</sup> Amount of 1,2-PDO produced per mol of Cu, in 24 h