

## Supporting Information

For

**An efficient Cu-based catalyst for the hydrogenation of ethylene carbonate to ethylene glycol and methanol**

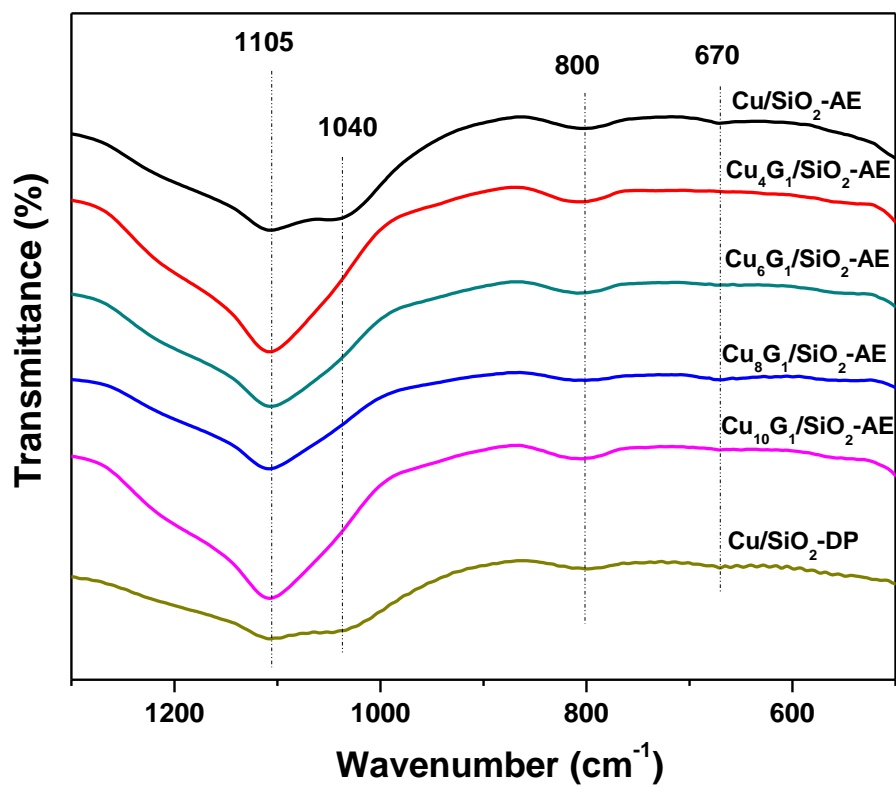
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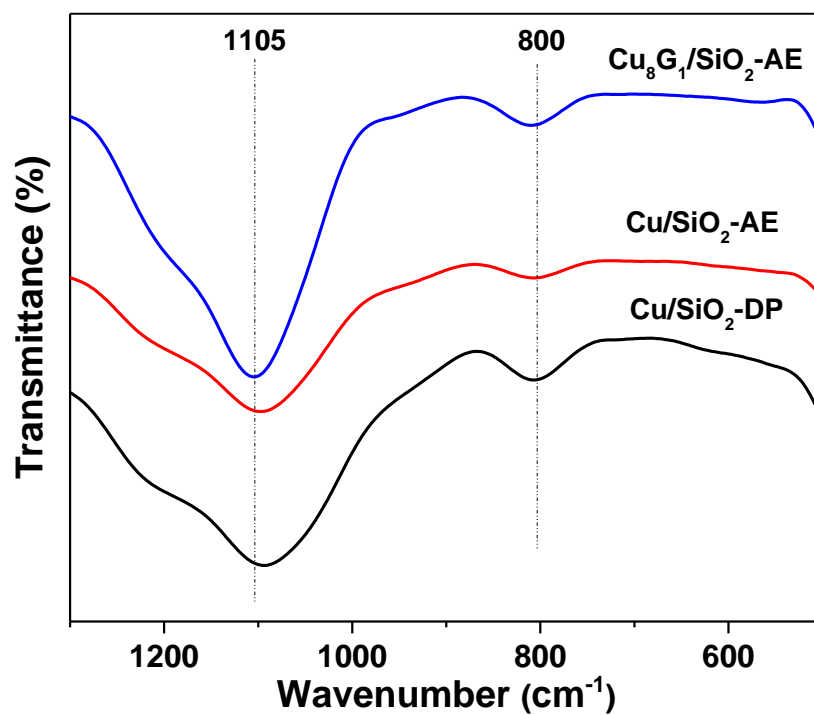
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**Fig. S1** FT-IR spectra of as-calcined Cu/SiO<sub>2</sub>-DP, Cu/SiO<sub>2</sub>-AE and Cu<sub>x</sub>G<sub>1</sub>/SiO<sub>2</sub>-AE after calcined in air at 450 °C for 4 h.

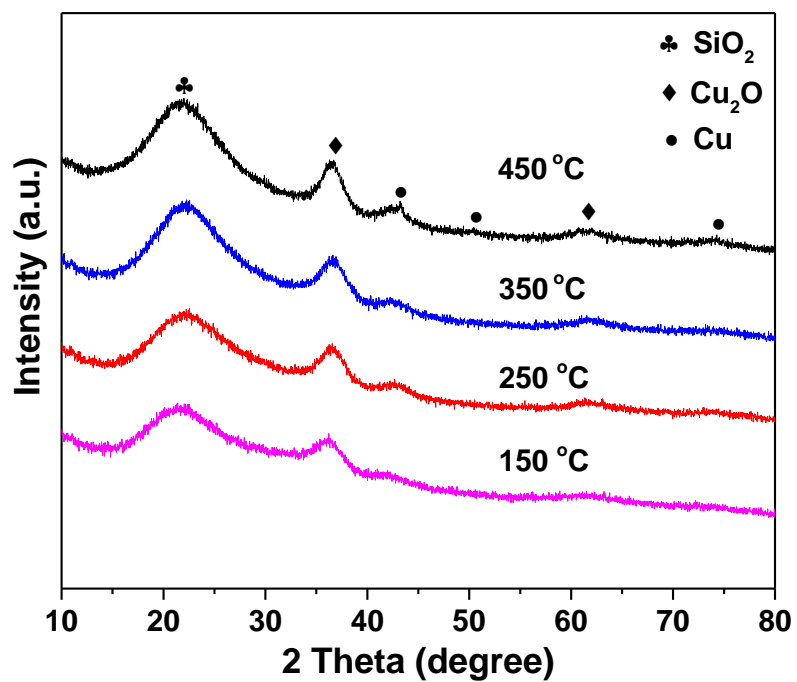


**Fig. S2** FT-IR spectra of the Cu/SiO<sub>2</sub>-DP, Cu/SiO<sub>2</sub>-AE and Cu<sub>8</sub>G<sub>1</sub>/SiO<sub>2</sub>-AE catalysts after pretreated in flowing hydrogen at 350 °C for 1 h.

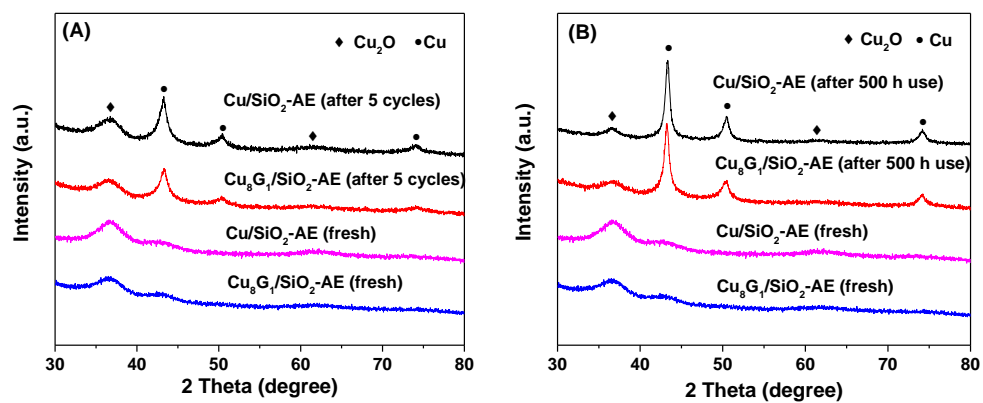
**Table S1** Reaction results obtained with the Cu<sub>8</sub>G<sub>1</sub>/SiO<sub>2</sub>-AE catalyst in the different solvents for the hydrogenation of EC to yield ME and TG.

Catalyst	Solvent	EC conv.(%)	Sel. (%)	
			ME	EG
Cu <sub>8</sub> G <sub>1</sub> /SiO <sub>2</sub> -AE	1, 4-dioxane	96	86	99
Cu <sub>8</sub> G <sub>1</sub> /SiO <sub>2</sub> -AE	Tetrahydrofuran	92	78	97
Cu <sub>8</sub> G <sub>1</sub> /SiO <sub>2</sub> -AE	ethanol	90	13	78

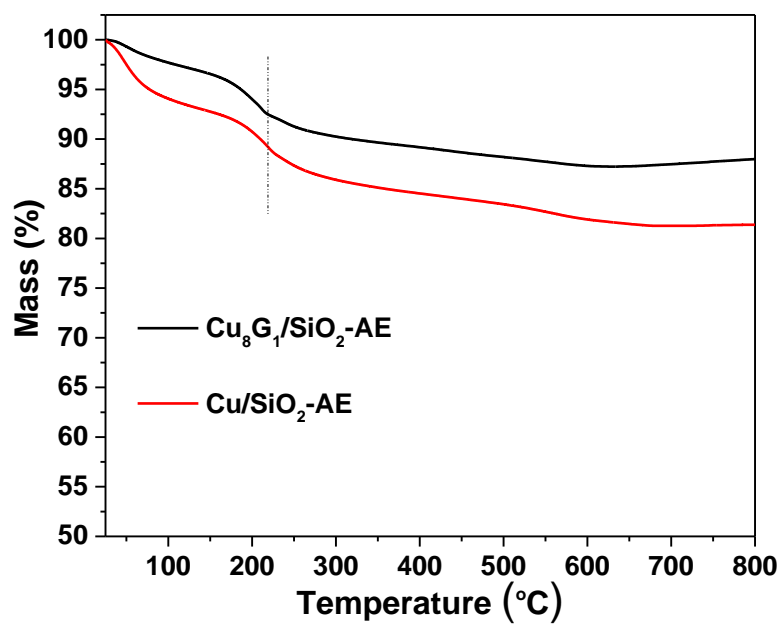
Reaction conditions: 10 mL 10 wt% EC in different solvent, 4 MPa H<sub>2</sub>, 0.176 g catalyst, 600 rpm, 180 °C and 2.5 h.



**Fig. S3** XRD patterns of the Cu<sub>8</sub>G<sub>1</sub>/SiO<sub>2</sub>-AE catalysts after reduced at different temperatures.



**Fig. S4** XRD patterns of the Cu<sub>8</sub>G<sub>1</sub>/SiO<sub>2</sub>-AE and Cu/SiO<sub>2</sub>-AE catalysts (A) before and after 5 cycles in a batch reactor and (B) before and after 500 h TOS in a fixed-bed reactor.



**Fig. S5** TG analyses of the used  $\text{Cu}/\text{SiO}_2\text{-AE}$  and  $\text{Cu}_8\text{G}_1/\text{SiO}_2\text{-AE}$  catalysts after 500 h TOS.

**Table S2** H<sub>2</sub>-TPD data

<b>Catalyst</b>	<b>H<sub>2</sub> desorption (μmol/g<sub>cat</sub>)</b>			
	T <sub>D1</sub> (112 °C)	T <sub>D2</sub> (320 °C)	T <sub>D3</sub> (580 °C)	Total
<b>Cu/SiO<sub>2</sub>-DP</b>	19	9	146	174
<b>Cu/SiO<sub>2</sub>-AE</b>	18	5	159	182
<b>Cu<sub>8</sub>G<sub>1</sub>/SiO<sub>2</sub>-AE</b>	18	17	173	207