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**Supporting Information** 



Fig. S1 XRD patterns of the spent CuO-CeO<sub>2</sub> catalysts.





**Fig. S2** XPS spectra of the spent CuO-CeO<sub>2</sub> catalysts: (A) O 1s, (B) Ce 3d, (C) Cu 2p, and (D) Cu LMM.

Sample	Atomic ratio / %			Content of component / at.%		
	$O_A/(O_{A^+}O_L)$	Ce <sup>3+</sup> /(Ce <sup>3+</sup> +Ce <sup>4+</sup> )	Cu+/(Cu++Cu2+)	Ο	Ce	Cu
spent-20-CC	33.2	14.7	20.3	70.9	18.2	10.9
spent-20-C/C	29.3	12.5	13.2	69.7	22.8	7.5

 Table S1
 XPS data measured for the spent CuO-CeO<sub>2</sub> catalysts