Nonthermal Plasma Assisted Catalytic Oxidation of Carbon Monoxide over CuO_x@γ-Al_2O_3: Understanding Plasma Modification of Catalyst and Plasma-Catalyst Synergy

Jian Zhang, Xiaohong Yao, Qi Shao, Bowen Xu, Xiaoyang Liang, Chao Long*

State Key Laboratory of Pollution Control and Resource Reuse, School of the Environment, Nanjing University, 163 Xianlin Avenue, Nanjing 210023, China

*Corresponding author. Phone: +86 25 89680380, E-mail: clong@nju.edu.cn

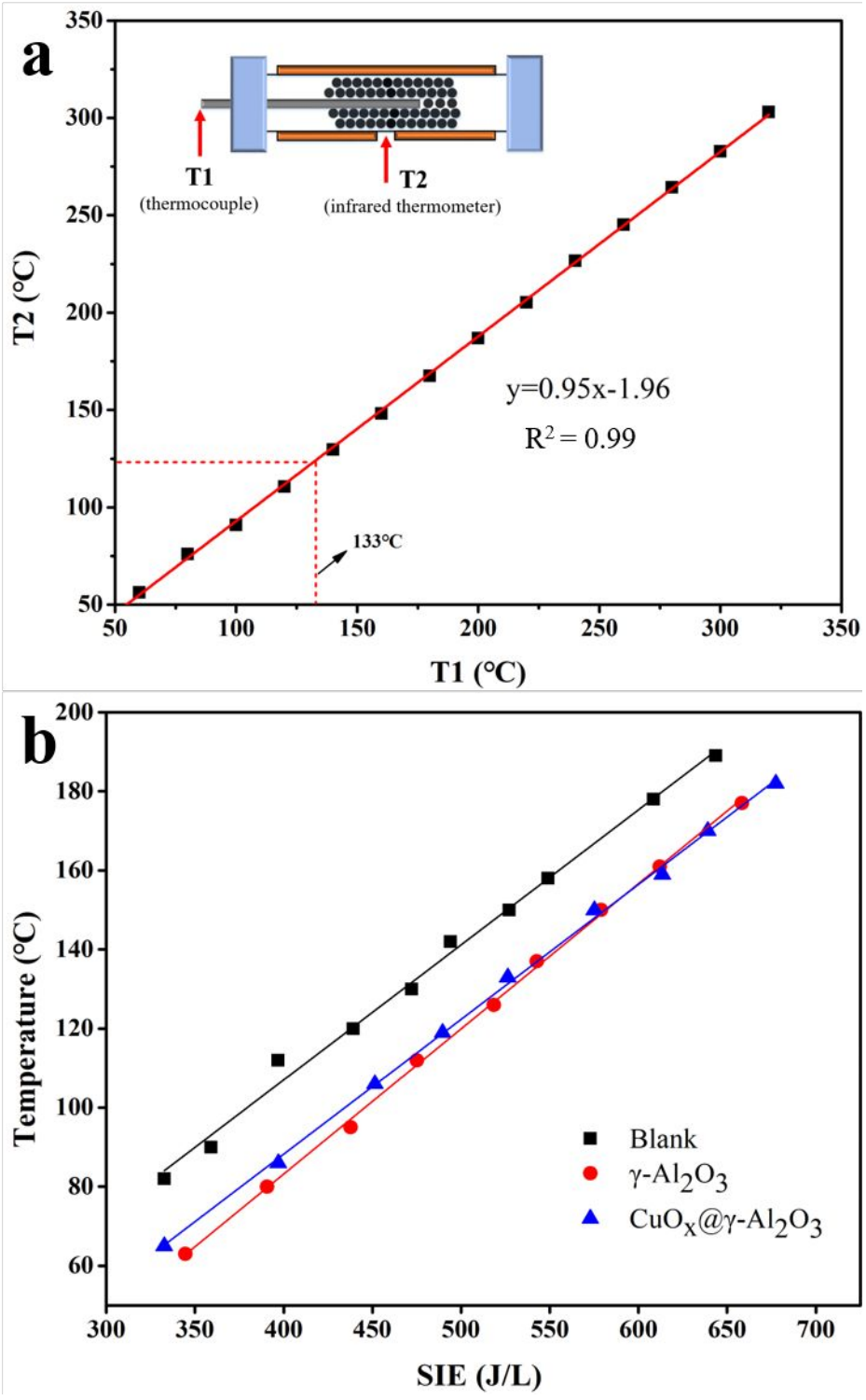

Figure S1. (a) The calibration curve between the outside wall temperature (T2) of reactor and the catalyst bed temperature (T1); (b) temperature change as a function of SIE in the plasma-catalytic system

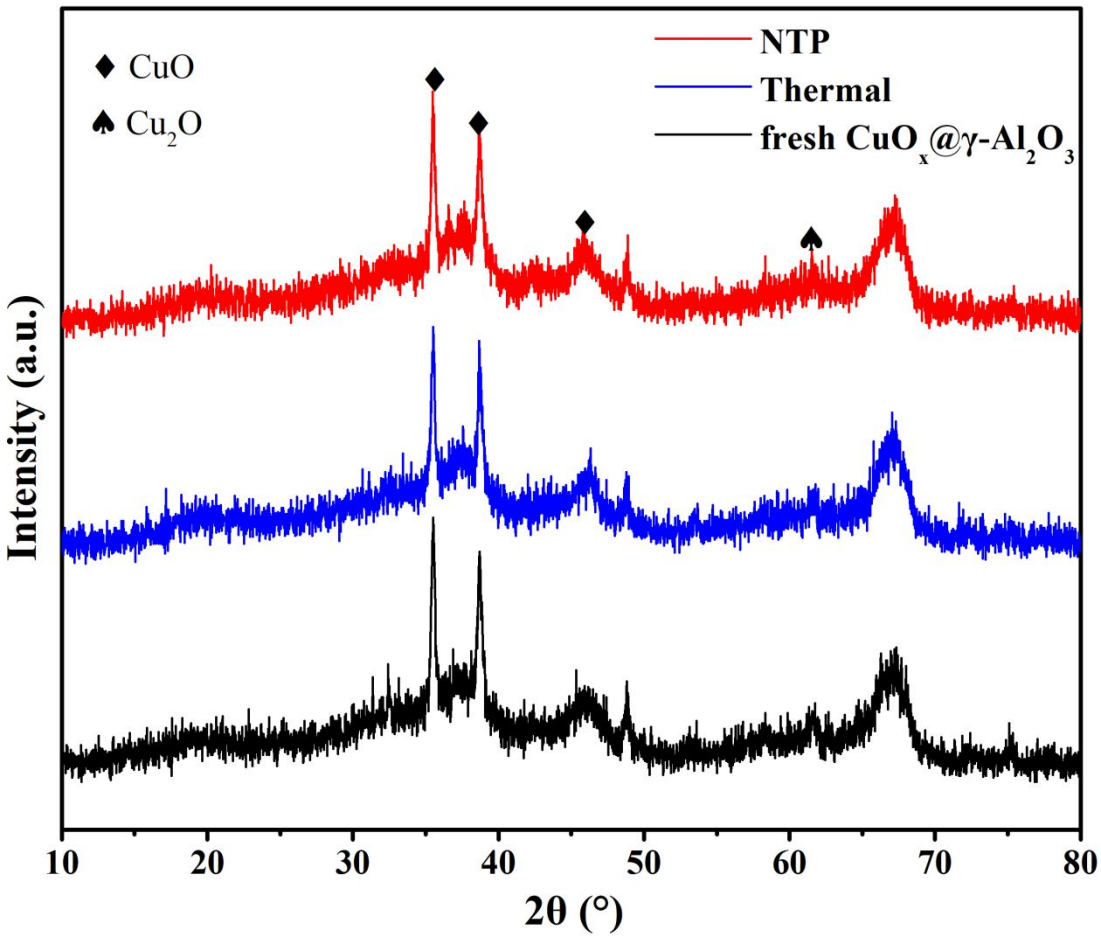

Figure S2. XRD patterns of the CuOx@γ-Al_2O_3 after 10h reaction under wet condition

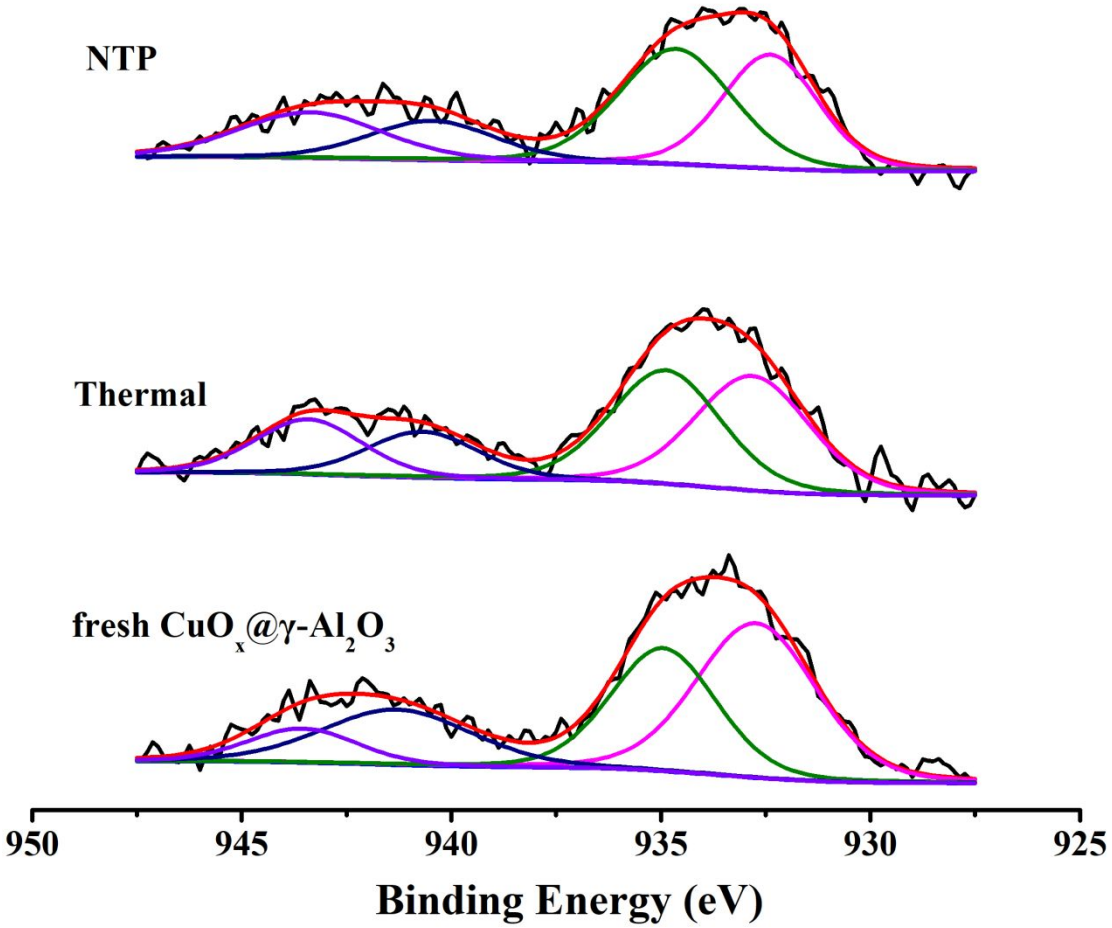

Figure S3. Fitted Cu 2p XPS spectrum of the CuOx@γ-Al_2O_3 after 10h reaction under wet condition

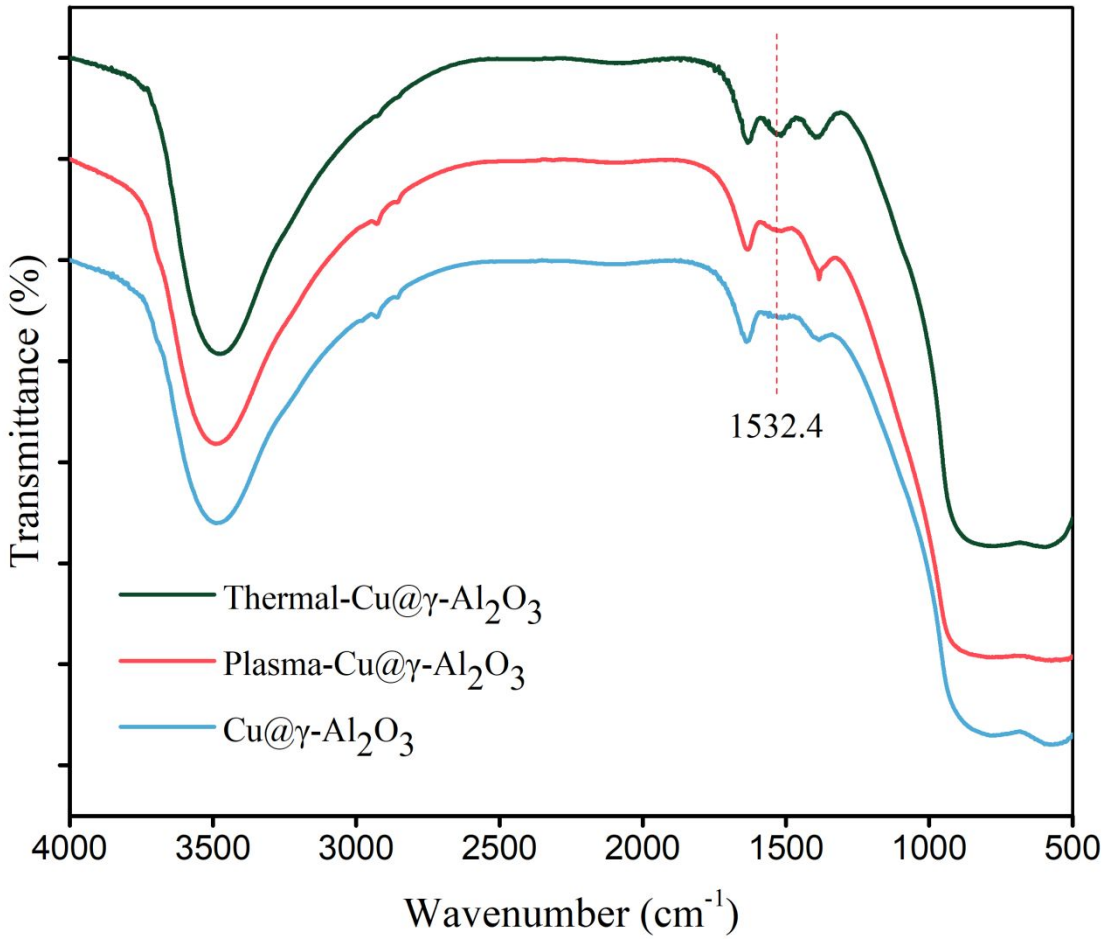

Figure S4. FT-IR spectrum of CuO_x@γ-Al_2O_3 catalysts after the thermal and plasma catalytic reaction under wet condition (RH80%)

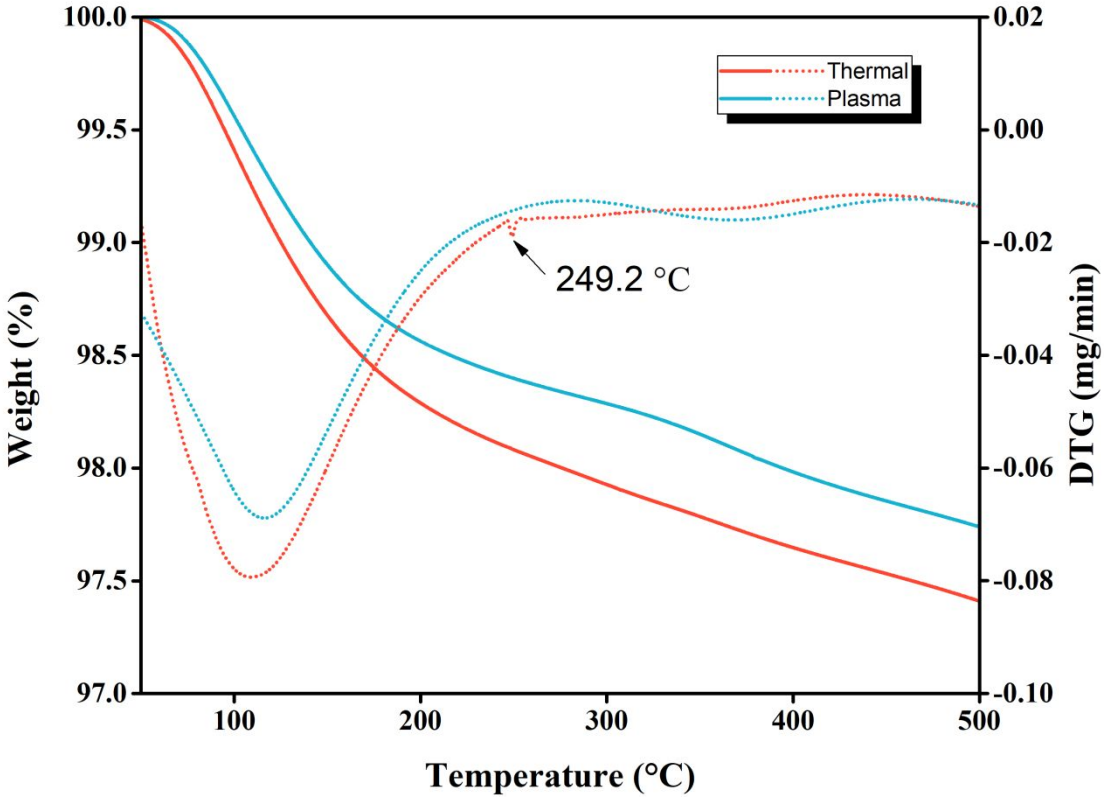

Figure S5. TG–DTG curves of CuO_x@γ-Al_2O_3 catalysts after the thermal and plasma catalytic reaction under wet condition (RH=80%)

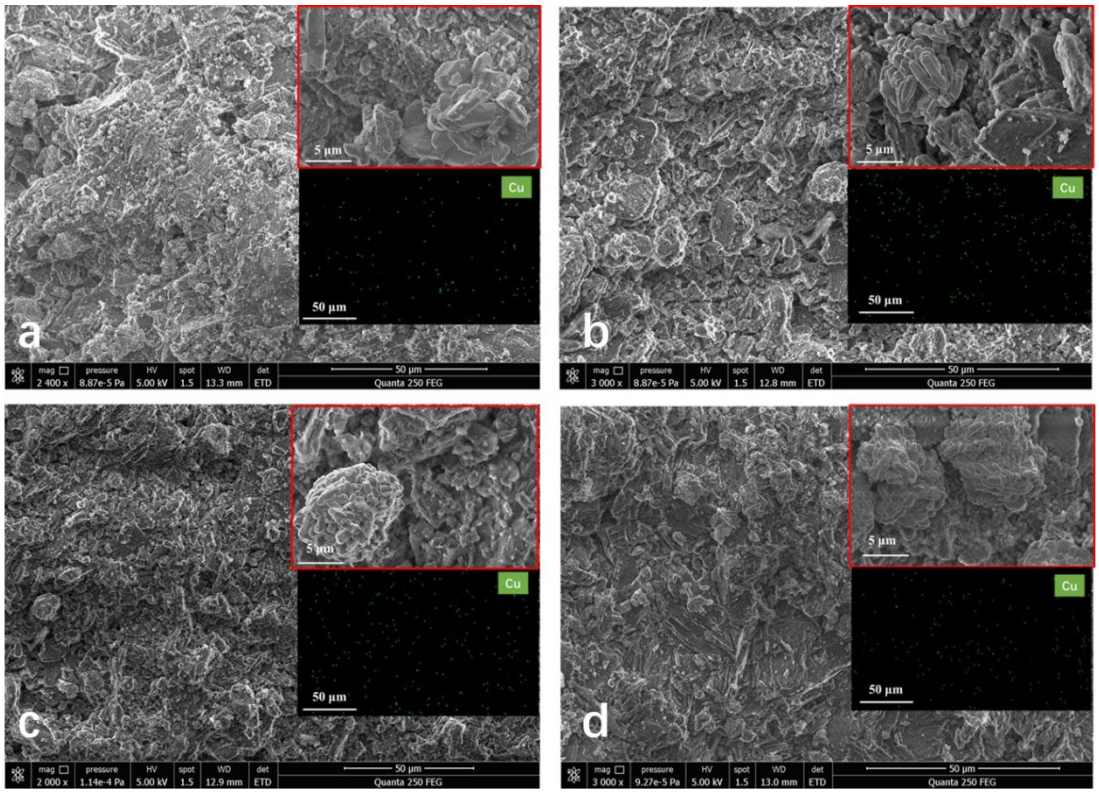

Figure S6. SEM images and of the corresponding Cu element mapping of (a) virgin CuO_x@γ-Al_2O_3 ; (b) CuO_x@γ-Al_2O_3-5; (c) CuO_x@γ-Al_2O_3-30; (d) CuO_x@γ-Al_2O_3-60