

## **Promoter effect of potassium in CuO/CeO<sub>2</sub> systems supported on carbon nanotubes and graphene for the CO-PROX reaction**

A.B. Dongil\*<sup>1</sup>, B. Bachiller-Baeza\*<sup>2,3</sup>, E. Castillejos<sup>4</sup>, N. Escalona<sup>5,6</sup>, A. Guerrero-Ruiz<sup>3,4</sup>, I. Rodríguez-Ramos<sup>2,3</sup>.

<sup>1</sup> Universidad de Concepción, Departamento de Físicoquímica, Laboratorio de Catálisis por metales, Edmundo Larenas 129, Concepción, Chile

<sup>2</sup> Instituto de Catálisis y Petroleoquímica, CSIC, c/Marie Curie No. 2, Cantoblanco, 28049 Madrid, Spain.

<sup>3</sup> Grupo de Diseño y Aplicación de Catalizadores Heterogéneos, Unidad Asociada UNED-CSIC (ICP), Spain.

<sup>4</sup> Dpto. Química Inorgánica y Técnica, Fac. de Ciencias, UNED, C/ Senda del Rey nº 9, 28040, Madrid, Spain.

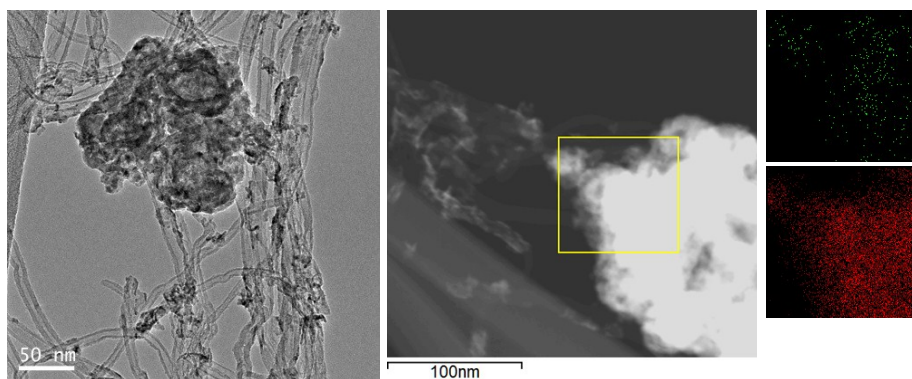
<sup>5</sup> Departamento de Ingeniería Química y Bioprocesos, Pontificia Universidad Católica de Chile, Avda. Vicuña Mackenna 4860, Macul, Santiago, Chile.

<sup>6</sup> Facultad de Químicas, Pontificia Universidad Católica de Chile.

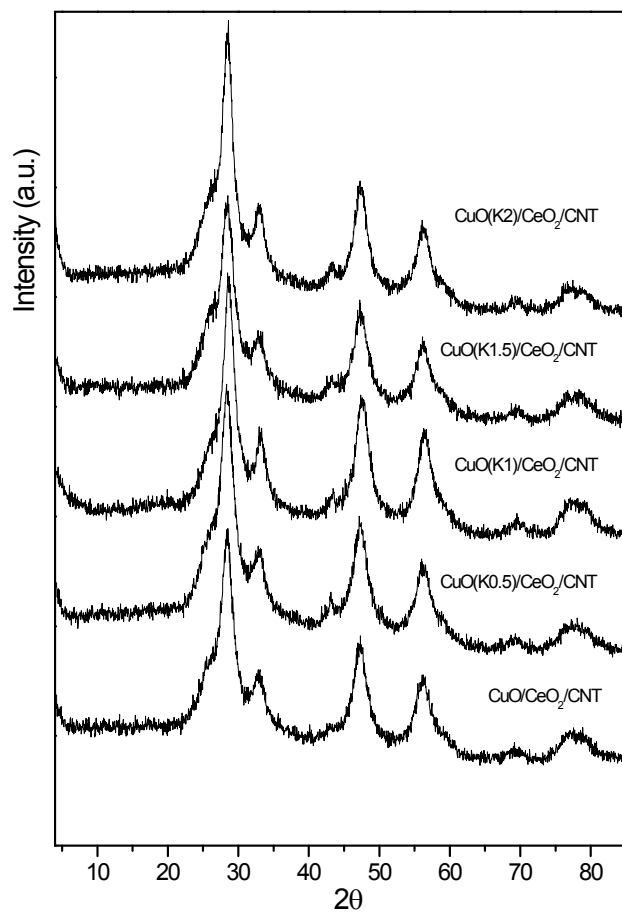
Table S1. Mean crystallite sizes of CeO<sub>2</sub> for the K-promoted series determined by XRD

Catalyst	d (nm)
Cu-CeO <sub>2</sub> /CNT	4.3
Cu(K0.5)-CeO <sub>2</sub> /CNT	4.0
Cu(K1)-CeO <sub>2</sub> /CNT	4.2
Cu(K1.5)-CeO <sub>2</sub> /CNT	3.9
Cu(K2)-CeO <sub>2</sub> /CNT	4.3

**Figure S1.** TEM and dark-field STEM image with corresponding EDS elemental maps of the highlighted area showing the chemical distribution of Ce (green) and Cu (red) for Cu(K1)-CeO<sub>2</sub>/CNT.



**Figure S2.** XRD patterns of the K-promoted series.



**Figure S3.** TEM and dark-field STEM image with corresponding EDS elemental maps of the highlighted area showing the chemical distribution of Ce (green) and Cu (red) and K (yellow) for Cu(K2)-CeO<sub>2</sub>/CNT.

