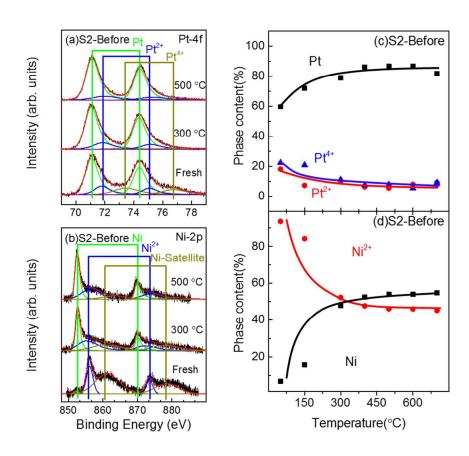
## **Supporting Online Information**

## Carbon Monoxide-Induced Stability and Atomic Segregation Phenomena in Shape-Selected Octahedral PtNi Nanoparticles

Mahdi Ahmadi<sup>1</sup>, Chunhua Cui<sup>2</sup>, Hemma Mistry<sup>1,3</sup>, Peter Strasser<sup>2</sup>, Beatriz Roldan Cuenya<sup>3\*</sup>

## \*e-mail: Beatriz.Roldan@rub.de

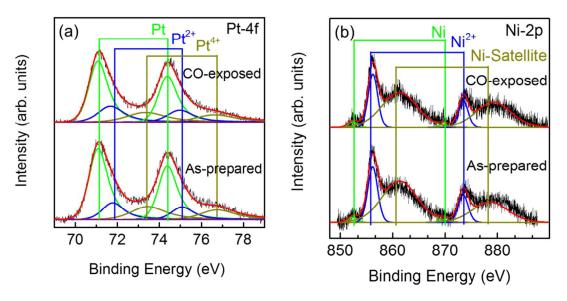


**Figure S1**. XPS spectra from the (a) Pt-4f and (b) Ni-2p core level regions of Pt<sub>0.5</sub>Ni<sub>0.5</sub> NPs supported on HOPG acquired at 25°C as prepared (fresh), and after annealing in UHV before exposure to 1-bar of CO(S2-before). Relative content of (c) Pt and (d) Ni species extracted from the analysis of XPS data acquired after annealing in UHV and before exposure to CO(S2-before).

<sup>&</sup>lt;sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL 32816, USA

<sup>&</sup>lt;sup>2</sup>Department of Chemistry, Chemical Engineering Division, Technical University Berlin, Germany

<sup>&</sup>lt;sup>3</sup>Department of Physics, Ruhr-University Bochum, 44780 Bochum, Germany



**Figure S2**. XPS spectra from the (a) Pt-4f and (b) Ni-2p core level regions of Pt<sub>0.5</sub>Ni<sub>0.5</sub> NPs supported on HOPG acquired at 25°C as prepared, and after exposure to 1-bar of CO.

| Sample         | Pt(%) | Pt <sup>2+</sup> (%) | Pt <sup>4+</sup> (%) | Ni(%) | Ni <sup>2+</sup> (%) |
|----------------|-------|----------------------|----------------------|-------|----------------------|
| S2 As-prepared | 59.6  | 18.1                 | 22.3                 | 6.5   | 93.5                 |
| S2 CO-Exposed  | 60.5  | 19.2                 | 20.3                 | 7.9   | 92.1                 |

**Table S1** Relative content of Pt and Ni species extracted from the analysis of XPS data acquired at 25°C as prepared, and after exposure to 1-bar of CO (S2) at 25°C. The CO exposure resulted in a small reduction of the relative content of oxidized Pt and Ni species.