Supplementary information

Effect of the Colloidal Preparation Method for Supported Preformed Colloidal Au Nanoparticles for the Liquid Phase Oxidation of 1,6-Hexanediol to Adipic Acid

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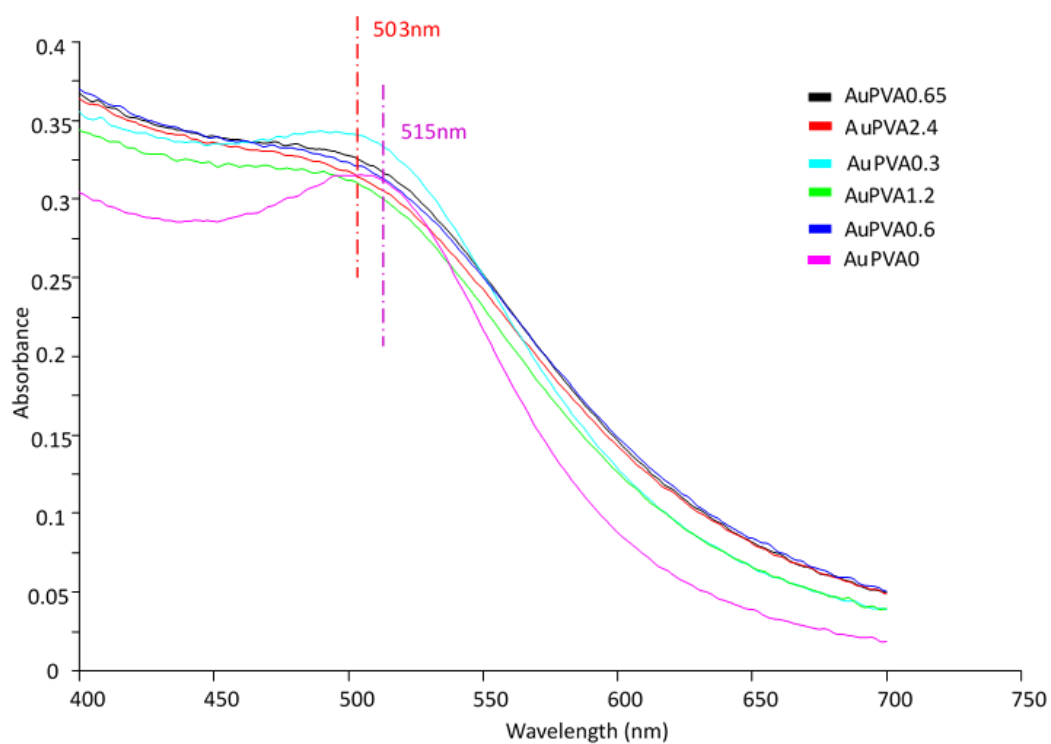* Correspondence: robert.wojcieszak@univ-lille.fr (R.W.); nikolaos.dimitratos@unibo.it (N.D.)

Figure S1. UV-Vis spectra of Au colloidal solutions with different PVA:Au weight ratio.
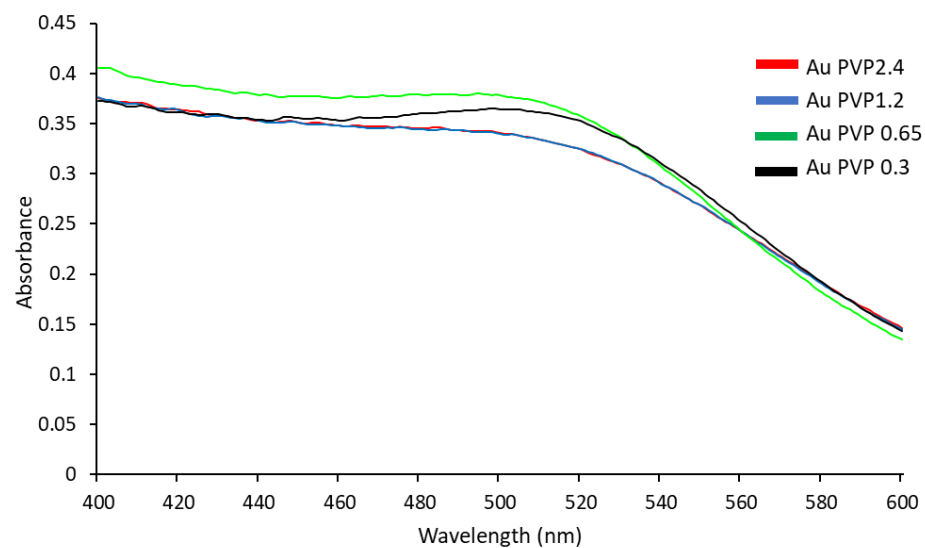

Figure S2. UV-Vis spectra for Au/AC PVP series after 25min from the addition of NaBH$_4$.
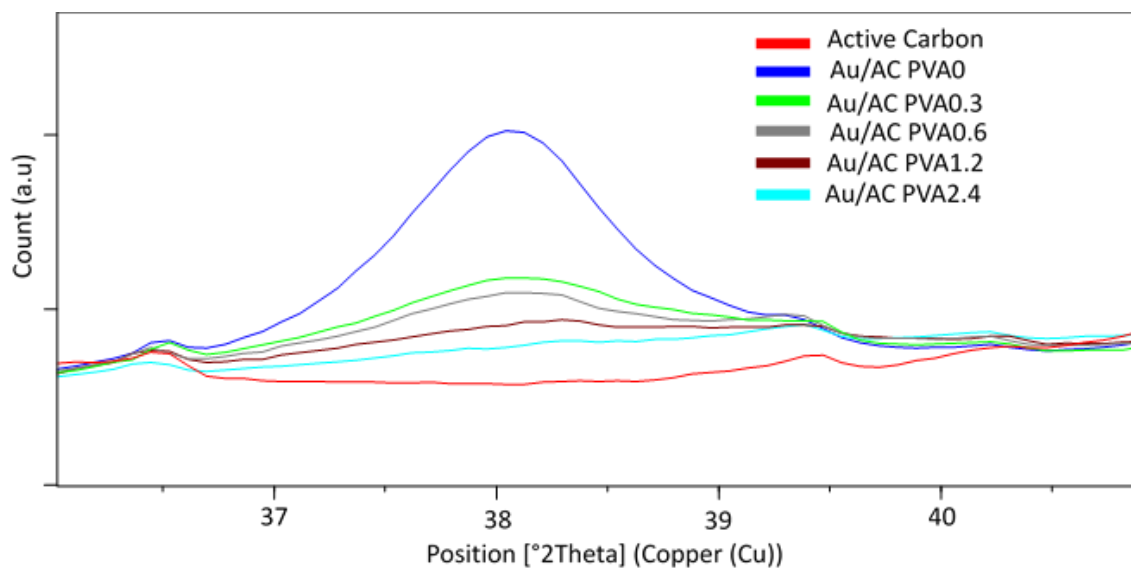
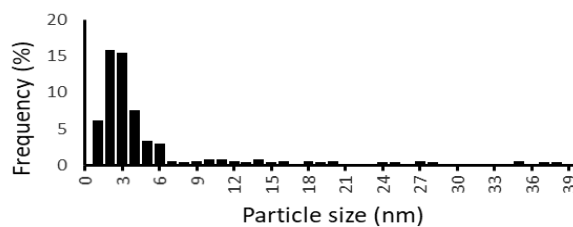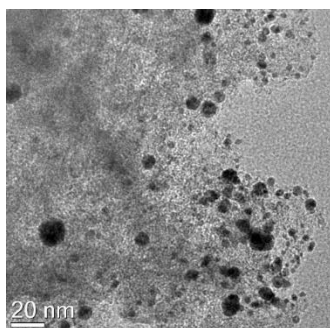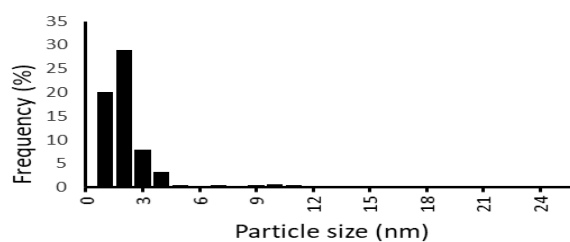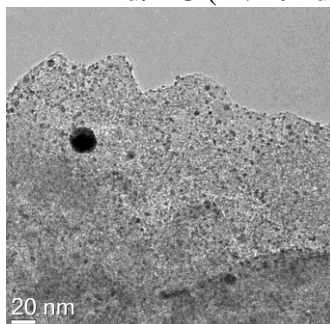**Figure S3.** XRD patterns of activated carbon and Au/AC samples with different PVA:Au weight ratio.

Table S1. Mean crystallite size for Au/AC using PVA with different PVA:Au weight ratio.

Catalyst	Mean crystallite size (nm)
Au/AC PVA0	6.4
Au/AC PVA0.3	3.6
Au/AC PVA0.6	3.1
Au/AC PVA1.2	2.6
Au/AC PVA2.4	2.2

Table S2. Mean crystallite size for Au/AC using PVP with different PVP:Au weight ratio.

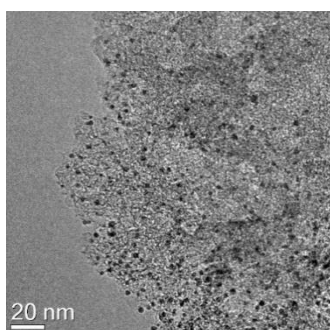| Catalyst	Mean crystallite size (nm) by XRD
Au/AC PVP0.3	6.7
Au/AC PVP0.65	6.4
Au/AC PVP 1.2	8.2
Au/AC PVP2.4	8.1

- **Au/AC (PVA/Au = 0.3)**

- **Au/AC (PVA/Au = 0.6)**
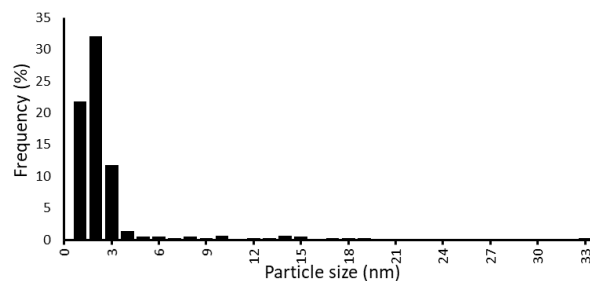

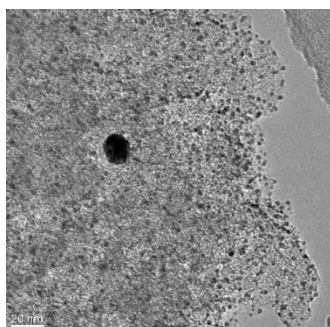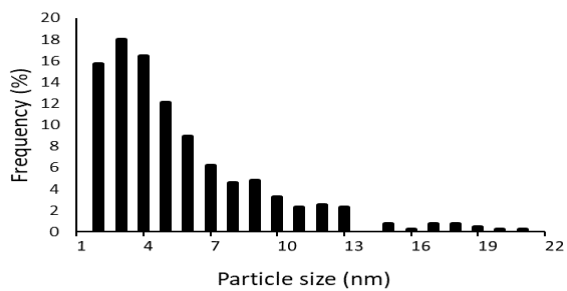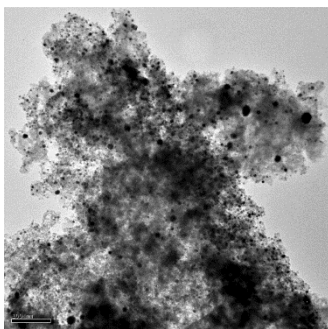- **Au/AC (PVA/Au = 1.2)**
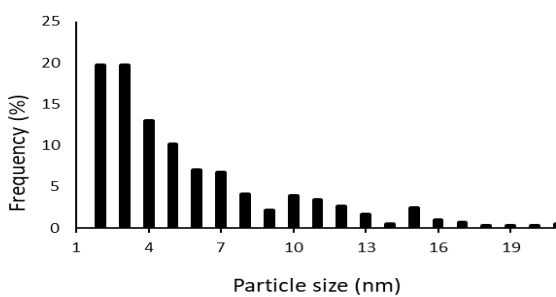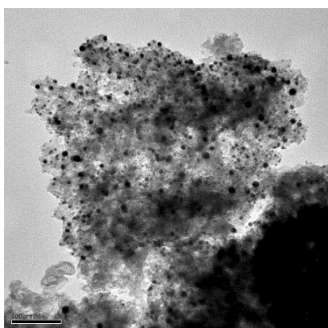

- **Au/AC (PVA/Au = 2.4)**

Figure S4. TEM images and particle size distributions of Au/AC synthesized using PVA with different PVA:Au weight ratio.
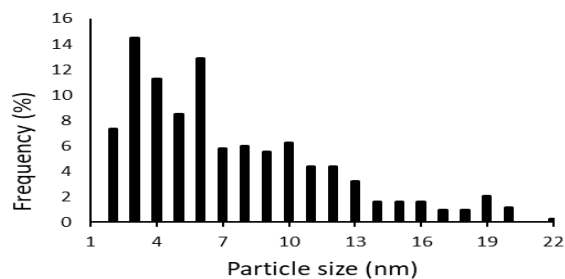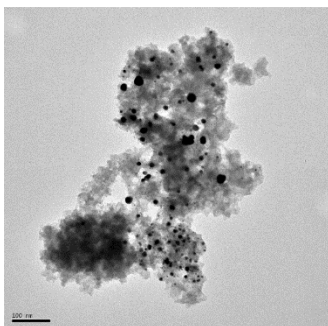
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- **Au/AC (PVP/Au = 0.3)**

- **Au/AC (PVP/Au = 0.65)**

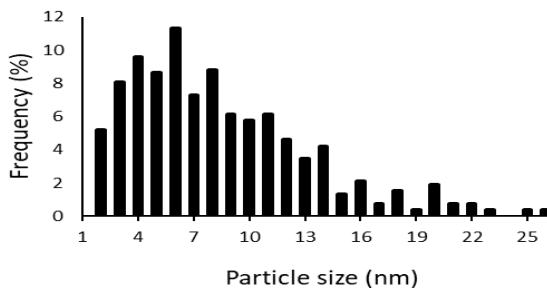- **Au/AC (PVP/Au = 1.2)**
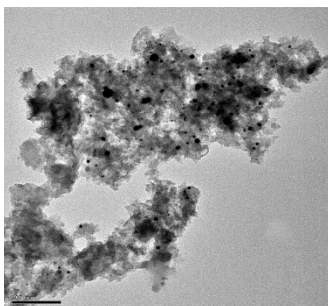

- **Au/AC (PVP/Au = 2.4)**

Figure S5. TEM images and particle size distributions of Au/AC synthesized using PVP with different PVA:Au weight ratio.
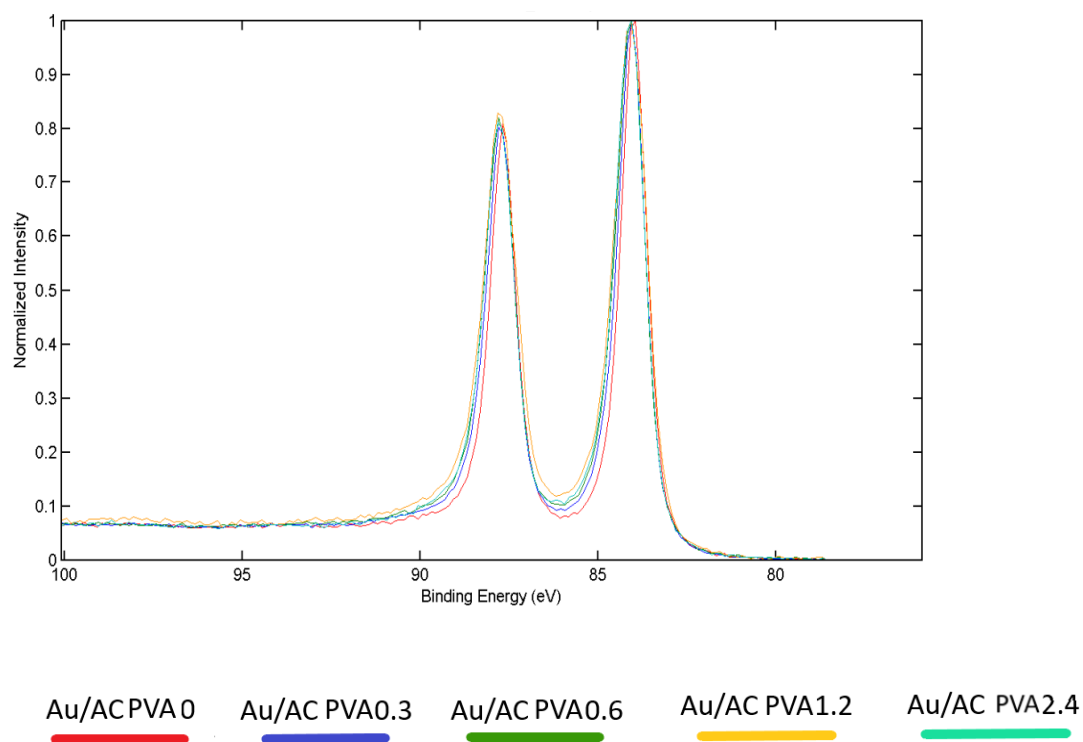
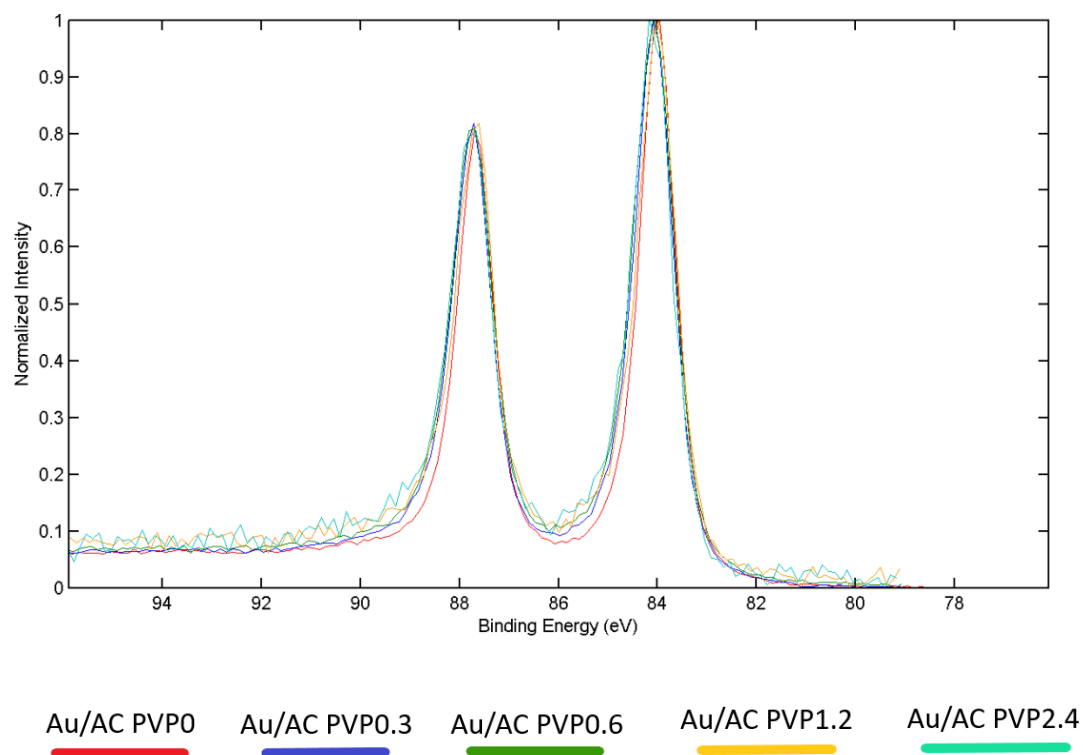**Figure S6.** XPS spectra for Au/AC using PVA with different PVA:Au weight ratio.

Figure S7. XPS spectra for Au/AC using PVP with different PVP:Au weight ratio (label "Au/AC PVP06" is the catalyst with PVP/Au=0.65 weight ratio).
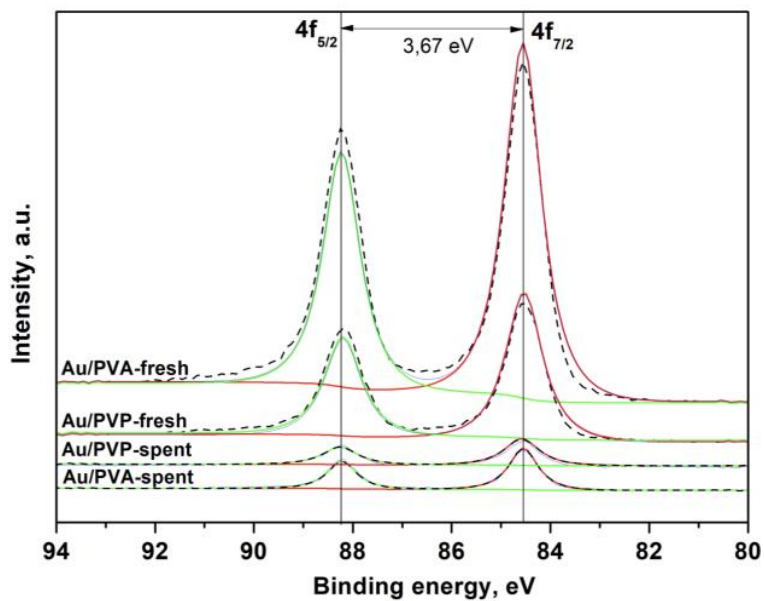
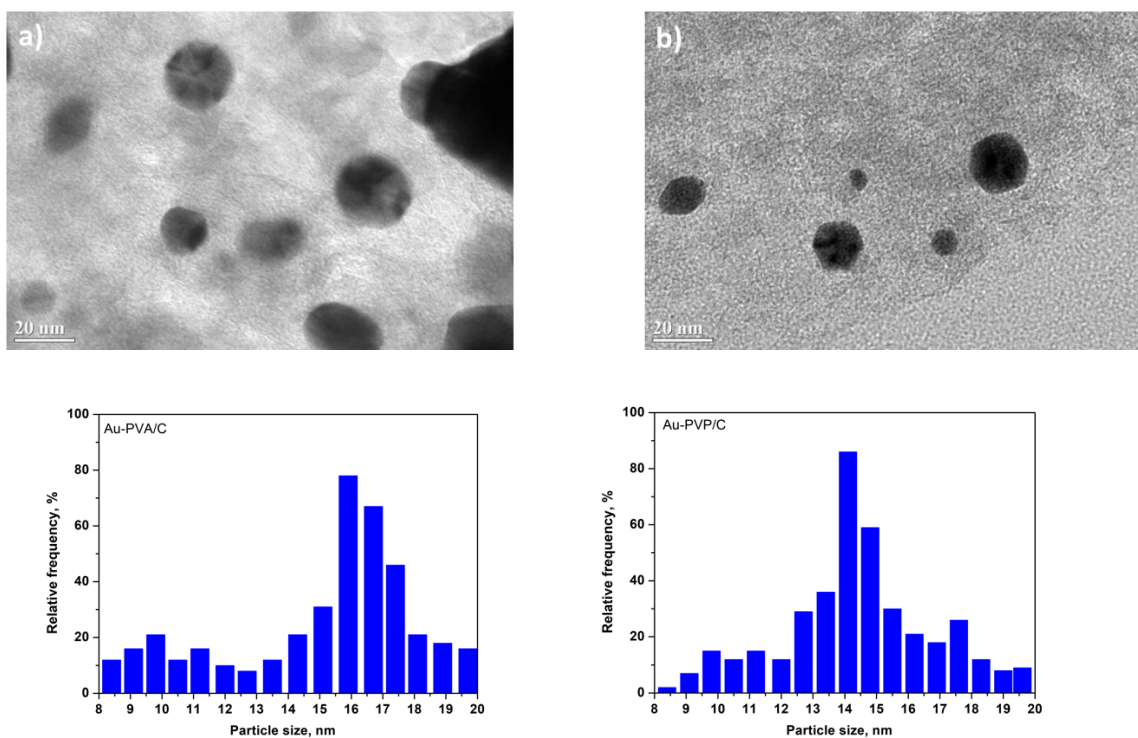**Figure S8.** XPS spectra of the Au4f core levels of the fresh and spent C-supported Au-PVA and PVP catalysts.

Figure S9. TEM images and particle size distributions of the spent catalysts a) Au-PVA/C and b) Au-PVP/C catalysts.
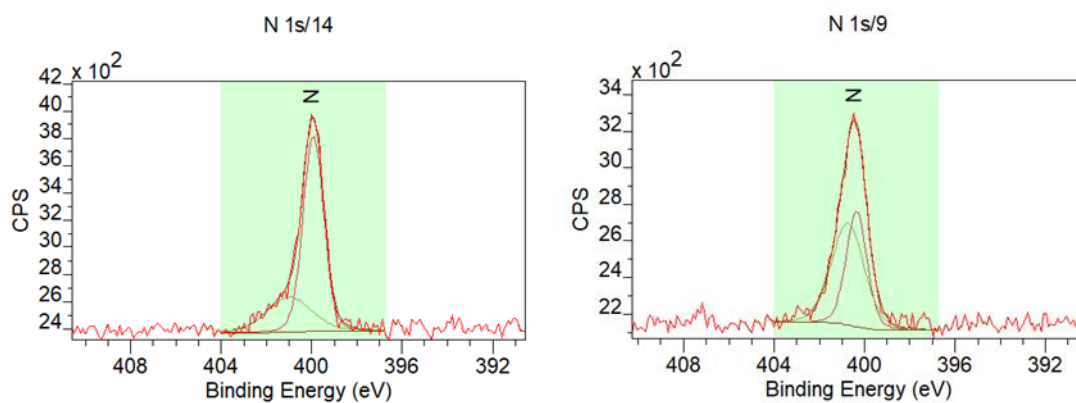

Figure S10. XPS spectra of the N1S core levels of the fresh and spent C-supported Au-PVP catalysts.