Functionalized Tyrosinase-Lignin Nanoparticles as Sustainable Catalysts for the Oxidation of phenols

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Structural modifications in OL-tyr evaluated by Gel Permeation Chromatography analysis (GPC)

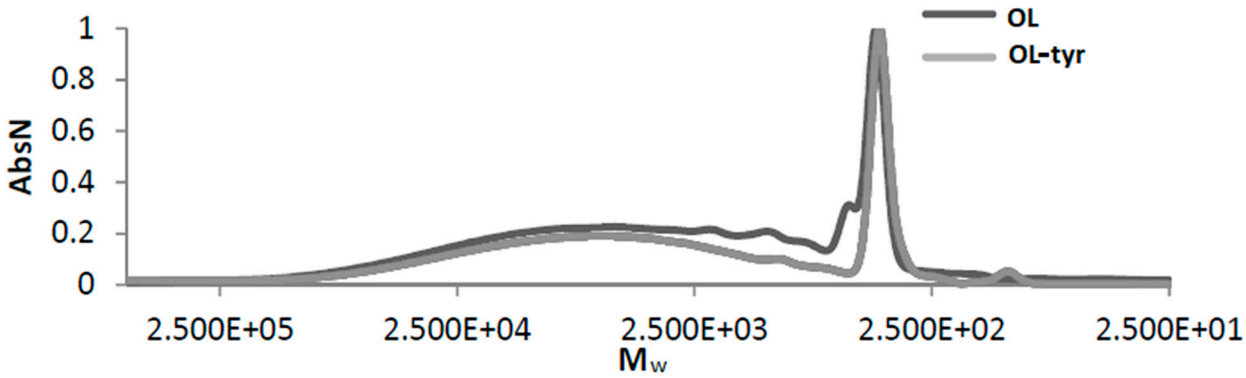

Figure S1. Gel Permeation Chromatography (GPC) of lignin Organosolv (OL black line) and after the treatment with tyrosinase (OL-tyr grey line).

The UV-vis absorption spectra of OL nanoparticles and OL-PDDA nanoparticles

The qualitative determination of the interaction between OL nanoparticles and OL-PDDA nanoparticles was demonstrated with UV-vis absorption measurements. Figure S2 show the UV-vis spectra of PDDA (Brown line), OL nanoparticles (Blue line) and OL-PDDA nanoparticles (Grey line). Adsorption peak at 276 nm corresponds to the shift of the characteristic B band of PDDA when adsorbed on lignin, this result has been previously reported and confirm the deposition of the PDDA layer on OL nanoparticles [1].

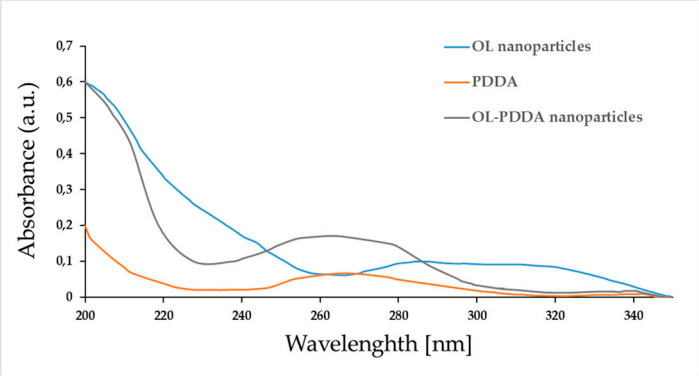

Figure S2. The UV-vis absorption spectra of OL nanoparticles coated with PDDA.

[1] Jiang, C.; He, H.; Jiang, H.; Ma, L.; Jia, D. M. Nano-lignin filled natural rubber composites: Preparation and characterization. *Express Polym. Lett*. **2013**, *7* 480-493; doi:10.3144/expresspolymlett.2013.44.