

Supplementary Materials

Modulation Of The Catalytic Properties Of Lipase B From *Candida Antarctica* By Immobilization On Tailor-Made Magnetic Iron Oxide Nanoparticles: The Key Role Of Nanocarrier Surface Engineering.

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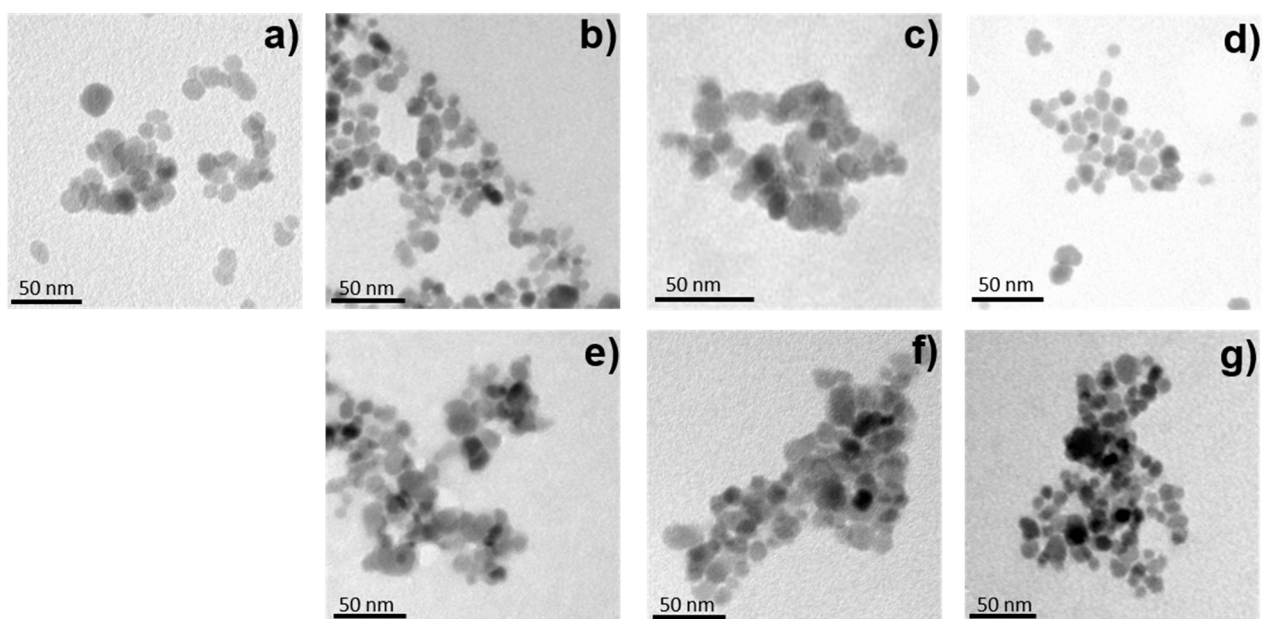


Figure S1: TEM micrographs of a) pristine nanoparticles, b) CA-coated NPs. c) SA-coated NPs. d) OA-coated NPs. e) CALB_{EDA}@CA-NPs. f) CALB_{EDA}@SA-NPs. g) CALB_{EDA}@OA-NPs.

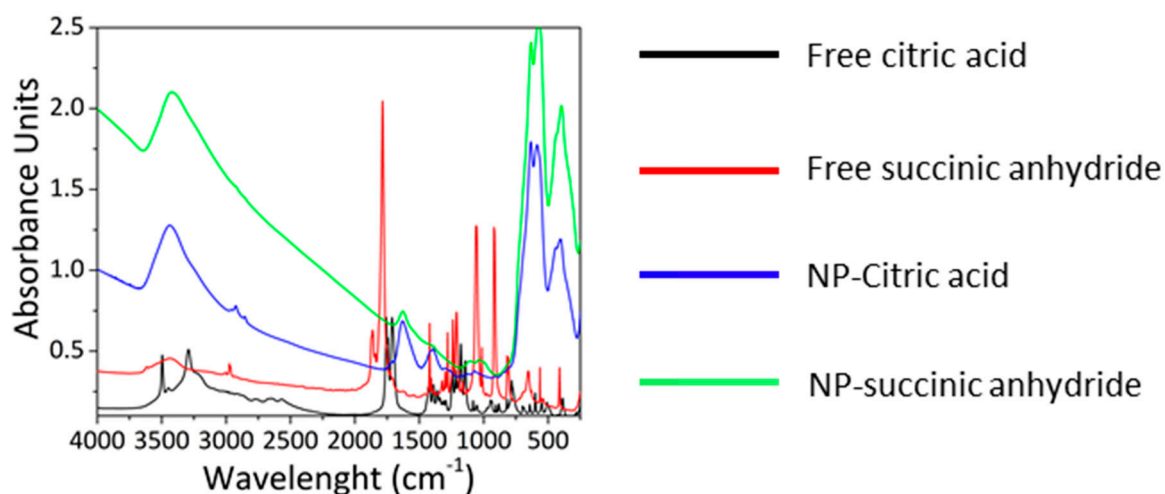


Figure S2: FTIR spectra of citric acid and succinic anhydride-coated NP compared to free citric acid and succinic anhydride molecules.

FTIR spectra of hydrophilic coated-NPs compared with the respective free molecules (citric acid and succinic anhydride) are reported in Figure S2. The peaks at around $1800\text{--}1700\text{ cm}^{-1}$ in the free molecules, corresponding to asymmetric and symmetric COO^- stretching, have been shifted to the right when conjugated to the NPs. The intensity of the peaks between $1500\text{--}750\text{ cm}^{-1}$ was attenuated in the case of coated NPs due to the high amount of iron oxide nanoparticles respect to the mass of coating in the sample.

Table S1. Recyclability assessment of enzyme nanoderivatives.^a

Cycle	CALB _{EDA} @CA-NPs		CALB _{EDA} @SA-NPs		CALB _{EDA} @OA-NPs	
	Specific Activity (IU/mg _{lip}) ^b	<i>E</i>	Specific Activity (IU/mg _{lip}) ^b	<i>E</i>	Specific Activity (IU/mg _{lip}) ^b	<i>E</i>
1	32	27	34.6	28	46.6	9
2	30	26.5	32.4	27.5	40	9
3	29.5	26.7	31	26.5	37	8

^a Hydrolysis of 2 mM methyl DL-mandelate (R,S-**1**) in MeCN-10 mM phosphate buffer, pH 7 (5:95) at 45°C.

^b The specific activity is expressed as IU/mg of lipase immobilized on each support. IU = μmol of substrate hydrolyzed x minute x amount of lipase.