Supporting information

Efficient capture of recombinant SARS-CoV-2 receptor-binding domain (RBD) with citrate-coated magnetic iron oxide nanoparticles

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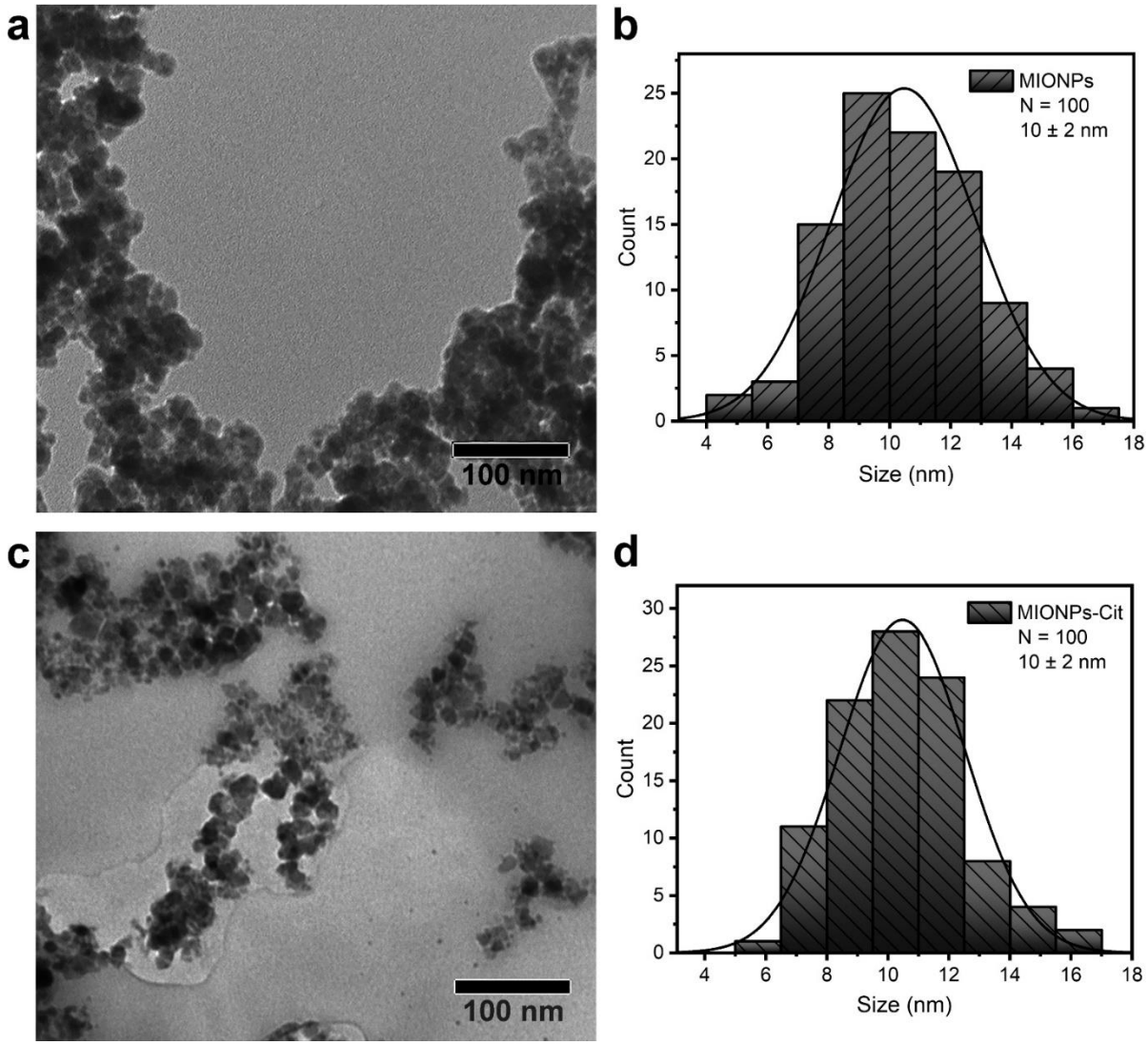

Figure S1: TEM images of (a) MIONPs and (b) MIONPs-Cit; and particles size distribution ((c) MIONPs and (d) MIONPs-Cit).

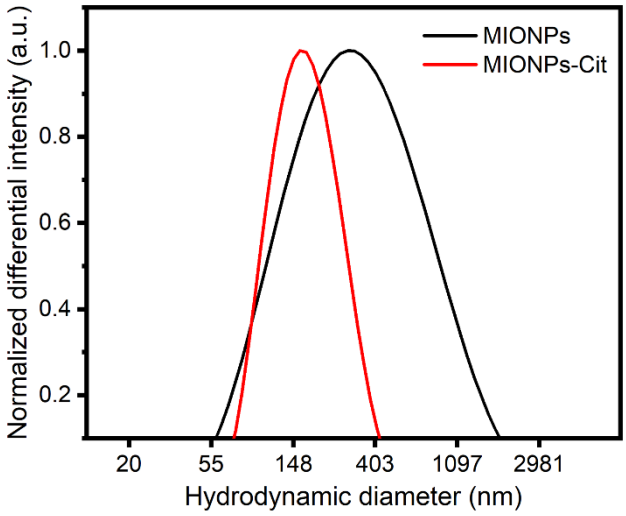

Figure S2: DLS profiles by intensity of MIONPs (black) and MIONPs-Cit (red).

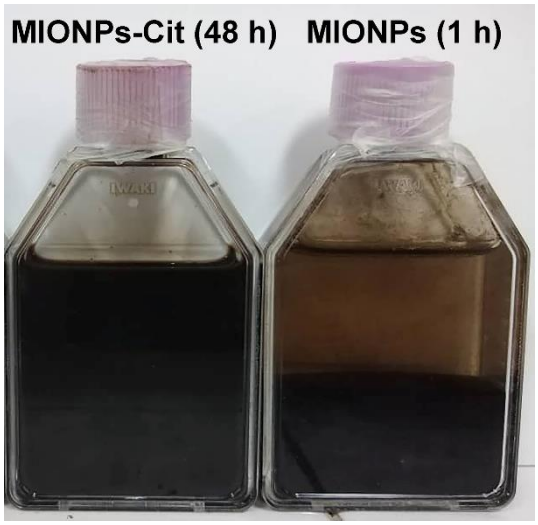

Figure S3: Photographs of MIONPs-Cit (left) after 48 h of coating and MIONPs (right) after 1 h of obtention.

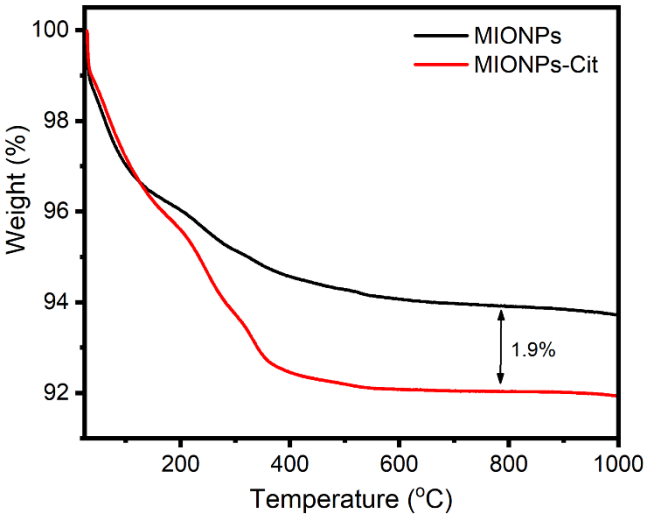

Figure S4: Thermogravimetric analysis of the MIONPs (black) and the MIONPs (red).

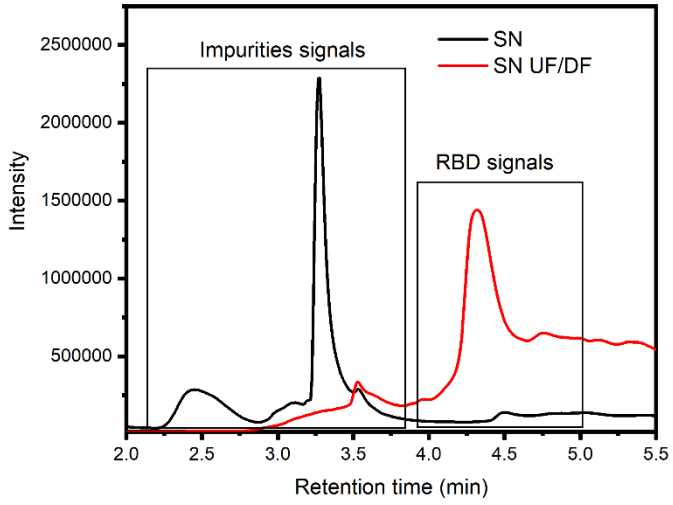

Figure S5: RP-HPLC chromatograms of the original supernatant and the SN UF/DF.

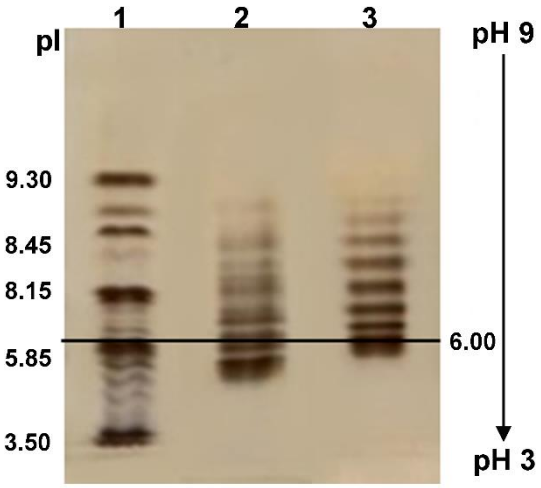

Figure S6: Isoelectric points of the monomeric (lane 2) and dimeric (lane 3) RBD. Lane 1 corresponds to Marker Broad range (pH 3-10) cat 17-0471-01.

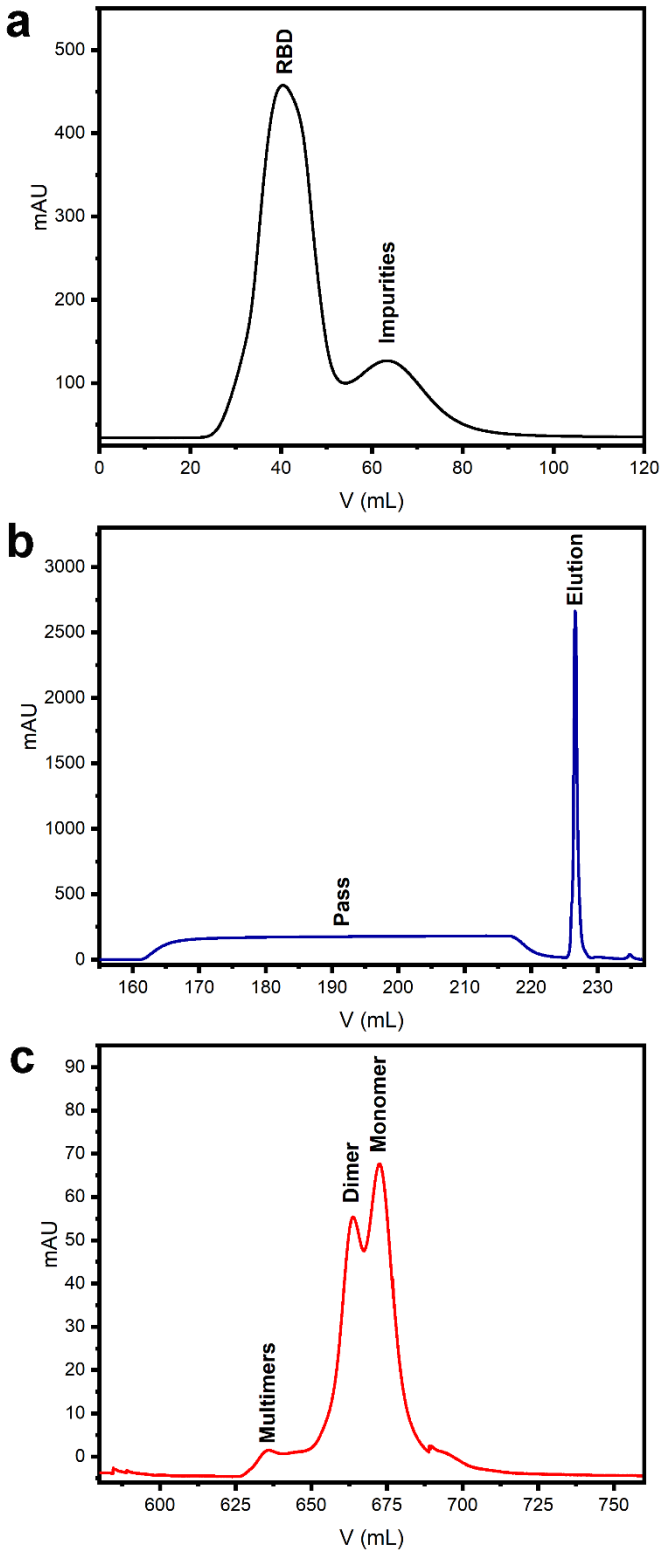

Figure S7: Purification process of the RBD obtained with MIONPs-Cit at the 50 mL scale. (a) Gel filtration chromatography with a Sephadex G-25 resin was used to exchange the desorbed RBD from the desorption buffer used in the capture step

with MIONPs-Cit to the adsorption buffer employed posteriorly in cationic exchange chromatography (b) HiTrap SP Sepharose HP cationic exchange chromatography. (c) Size exclusion chromatography using a Superdex resin.

Table S1: Mass balance of the process of RBD purification using MIONPs-Cit in the capture step.

	Capture	Buffer exchange	Cationic exchange	Molecular exclusion	Process
Yield ± SD (%)	68 ± 1	107 ± 2	66 ± 3	87 ± 5	42 ± 5

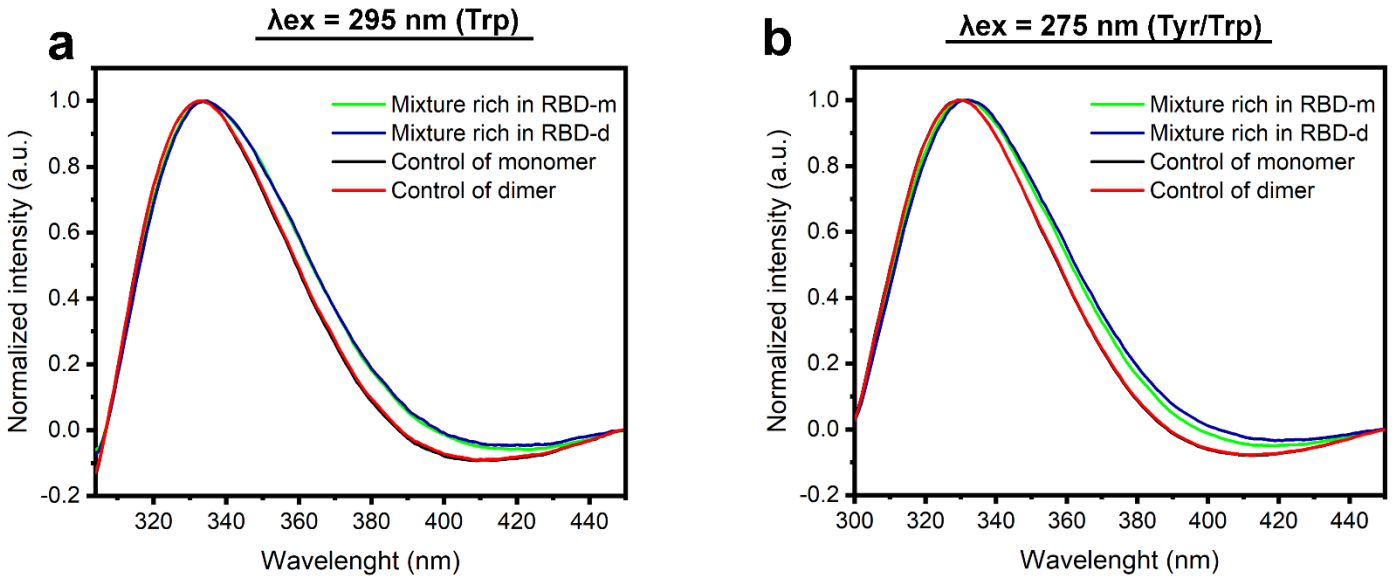

Figure S8: Fluorescence spectra of mixtures rich in monomer (green) and dimer (blue), a monomer control (black), and a dimer control (red). The spectra were obtained with an excitation wavelength of 295 nm for tryptophan (a) and 275 nm for tyrosine and tryptophan (b).

Table S2: Maximal emission wavelengths of the monomer, the dimer, and de corresponding controls, obtained with excitation wavelengths of 295 nm (Trp) and 275 nm (Tyr/Trp); and full width at half maximum (FWHM) obtained with excitation wavelengths of 295 nm.

Sample	Maximum emission wavelength (nm)		FWHM (λex = 295) (nm)
	λex = 295 nm (Trp)	λex = 275 nm (Tyr/Trp)	
Mixture rich in RBD-m	334	332	47.3
Mixture rich in RBD-d	334	331	47.2

Monomer control	333	330	44.1
Dimer control	333	329	43.9