

Magneto-Fluorescent Mesoporous Nanocarriers to Tackle Opportunistic Bacterial Infections in Colorectal Cancer

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Tables

Table S1. Reaction conditions for the loading assays of NANO2-COOH with DOX, OFLO and a combination of both.

	m_{NANO2} (mg)	V_{drug stock} (mL)	V_{solvent} (mL)	V_{total} (mL)
OFLO	20	3.2 ¹	3.2 (miliQ H ₂ O)	6.4
DOX	20	3.2 ²	3.2 (PBS 0.01M)	6.4
DOX + OFLO	20	3.2 + 3.2	-	6.4

¹ OFLO stock (2 mg/mL) prepared in miliQ H₂O

² DOX stock (2 mg/mL) prepared in PBS 0.01M (pH 7.0)

Table S2. Korsmeyer-Peppas calculated parameters for all pH related assays.

	pH 7.4				pH 5.0			
	NANO3@D	NANO3@O	NANO3@DO	NANO3@DO	NANO3@D	NANO3@O	NANO3@DO	NANO3@DO
	<i>DOX</i>	<i>OFLO</i>	<i>DOX</i>	<i>OFLO</i>	<i>DOX</i>	<i>OFLO</i>	<i>DOX</i>	<i>OFLO</i>
K_m	0.681	0.043	0.006	0.058	0.007	0.040	0.012	0.071
n	0.25	0.33	0.17	0.30	0.21	0.25	0.32	0.26

Figures

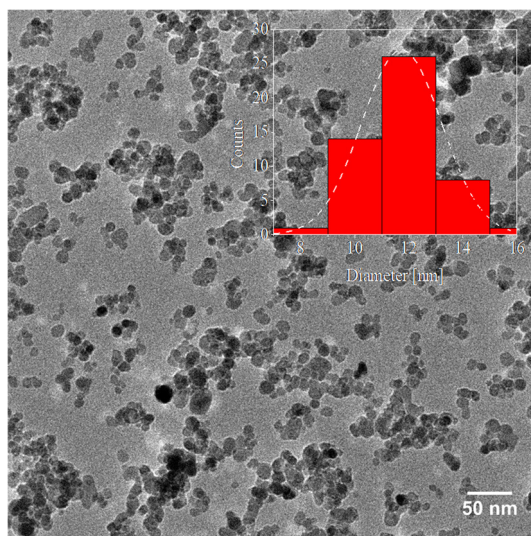


Figure S1. TEM micrograph of as-synthesized NANO1; *inset*: particle size distribution, with $d = 11.73 \pm 1.47$ nm ($n = 50$). Scale bar of 50 nm.

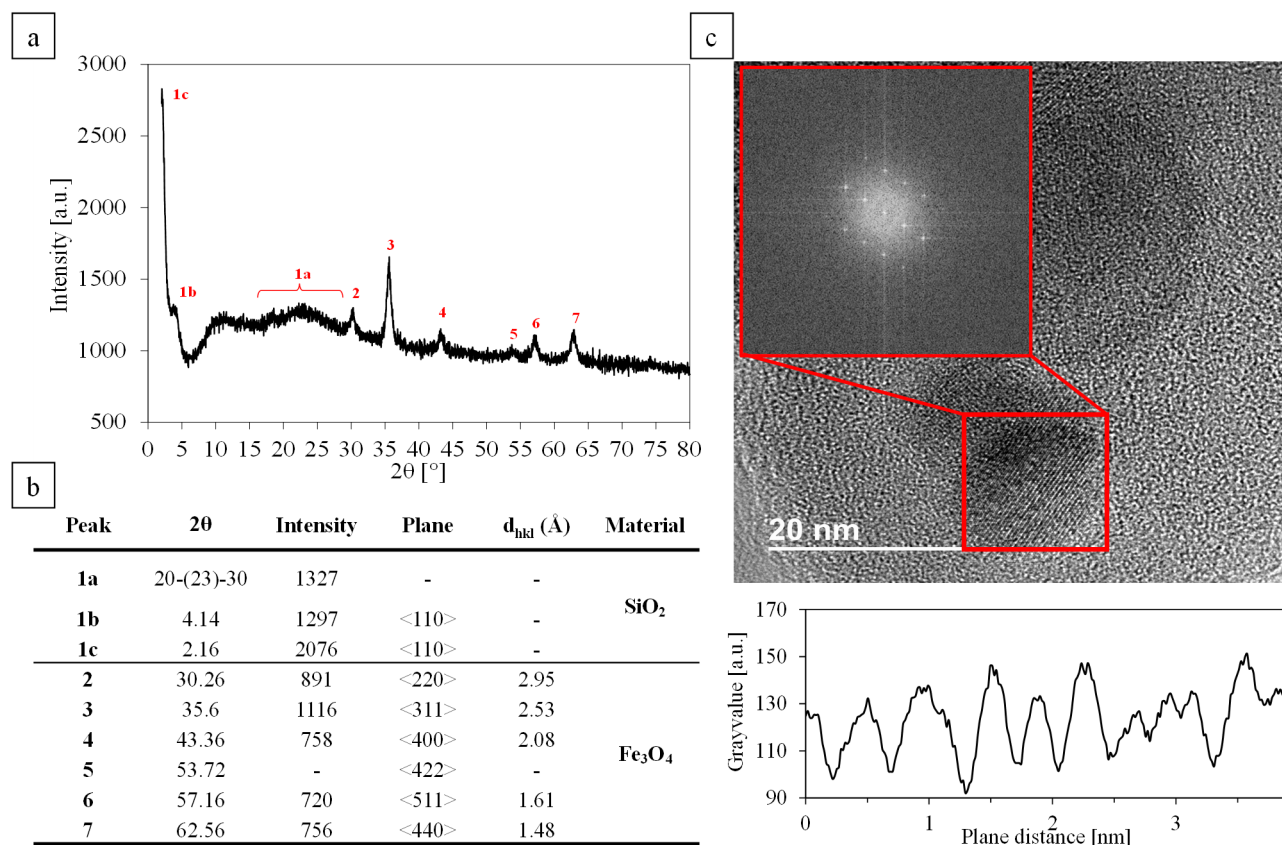


Figure S2. XRD spectrum of NANO2 (a), and 2θ peaks' information and attribution to silica (SiO₂) and magnetite (Fe₃O₄) *hkl* lattice distances (b). TEM micrograph NANO2 and respective ImageJ generated FFT measurement of the core lattice *d*-spacing of 2.50 Å, assigned to the <311> plane of Fe₃O₄; assessment via grayscale profile plot, by counting the cycles (10) and dividing by total distance (4 nm)⁸⁵(c).

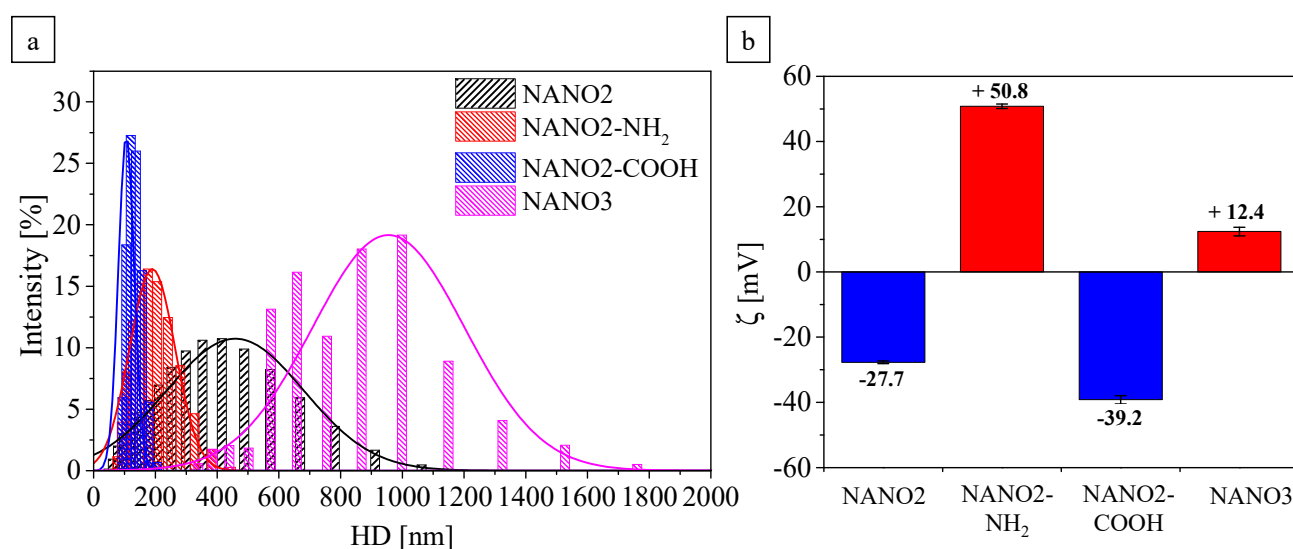


Figure S3. DLS intensity-determined average hydrodynamic diameter (HD) of each synthetic product (a), and correspondent average zeta potential (ζ).

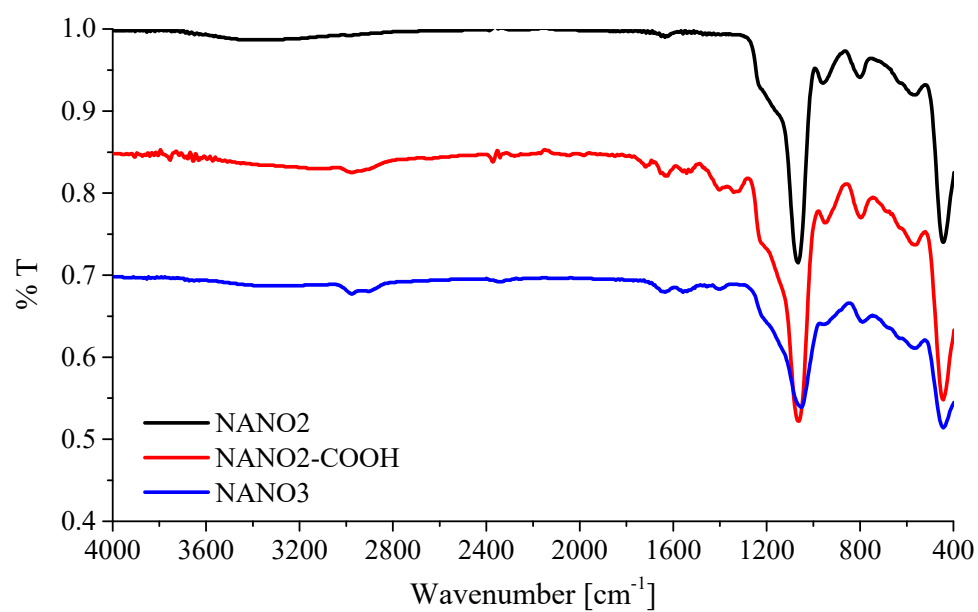


Figure S4. ATR-FTIR spectra of as-synthesized NANO2, NANO2-COOH and NANO3.

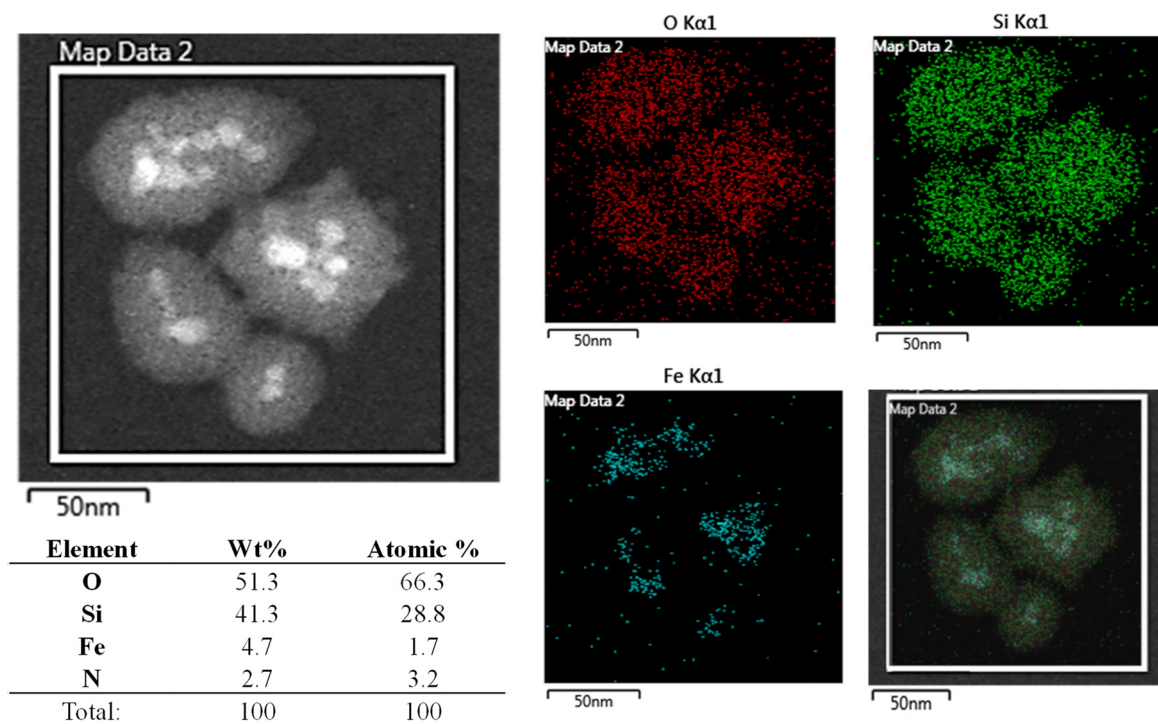


Figure S5. Dark-field STEM image of NANO3 and respective elemental analysis and distribution.

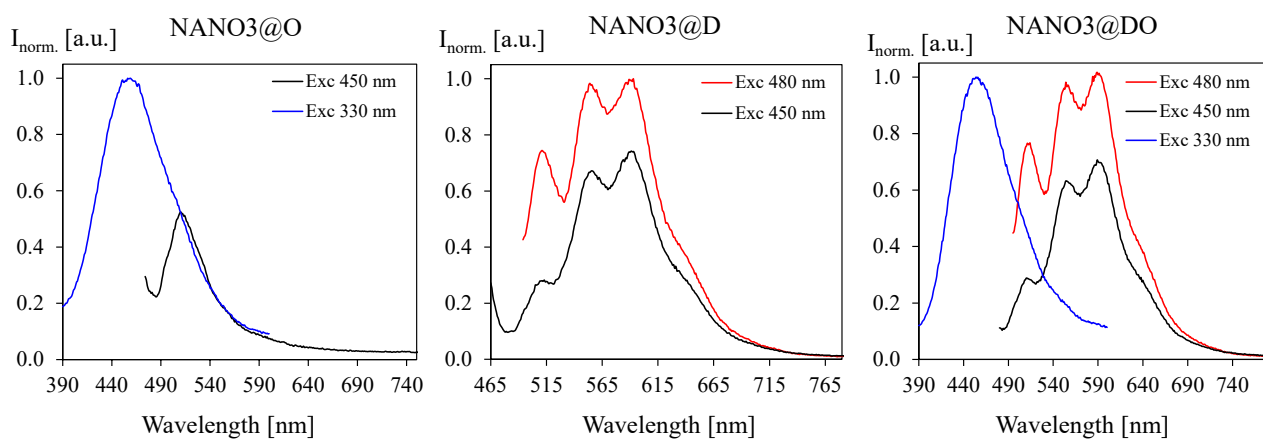


Figure S6. Fluorescence spectra of conjugated SiQD, DOX and OFLO in NANO3@O, NANO3@D and NANO3@DO systems.

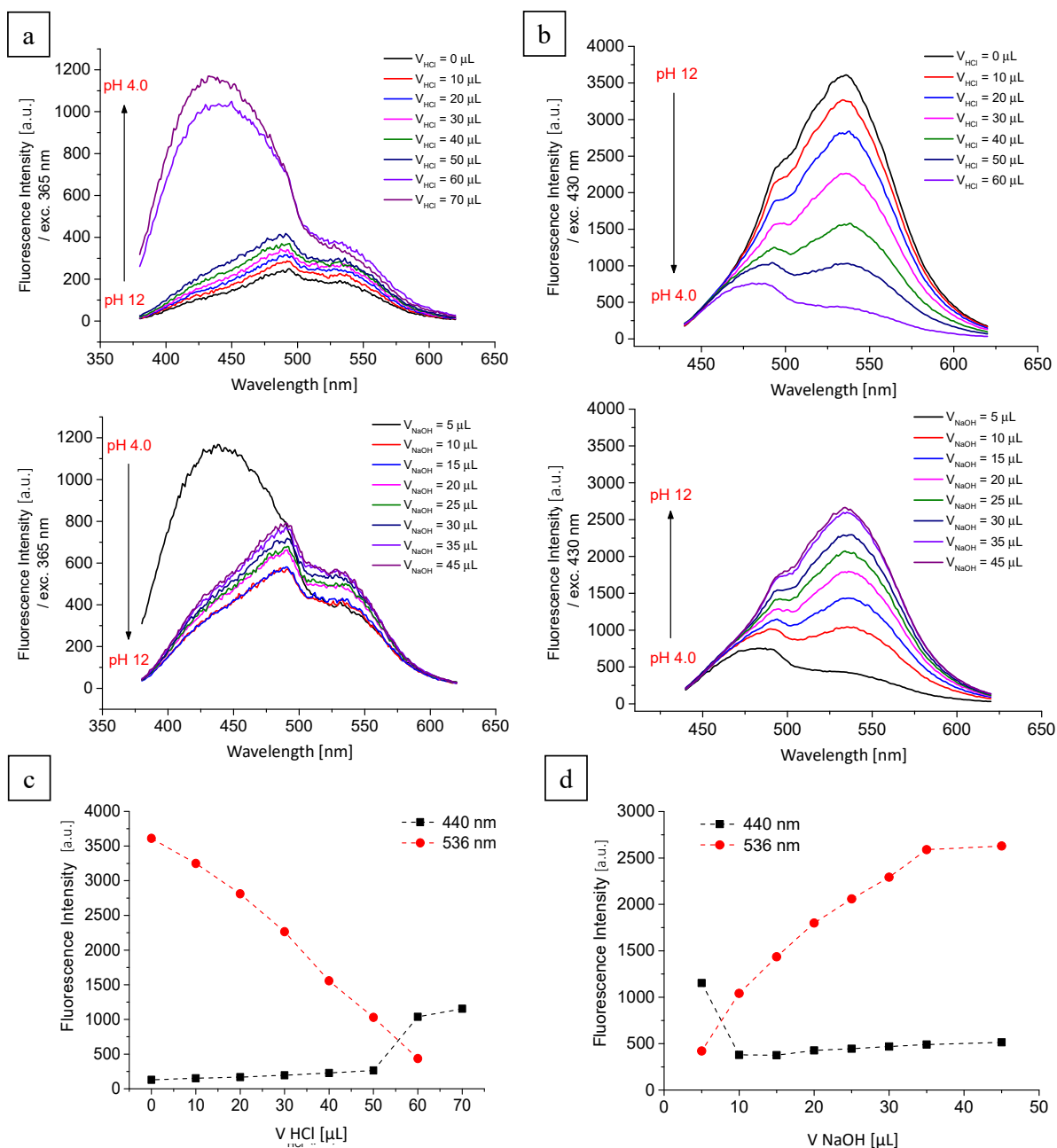


Figure S7. SiQD fluorescence spectra variations by sequential addition of HCl and NaOH 10 and 5 μL , respectively, after excitation at 365 nm (a) and 430 nm (b). Emission maxima (440 and 536 nm) variations with HCl (c) and NaOH (d) added volumes.

85. ImageJ, FFT Measurements, <https://imagej.nih.gov/ij/docs/examples/tem/>, (accessed 29/03/2022, 2022).