Supplementary Information

Polymer nanoparticles with electrostatically loaded multicargo for combined cancer phototherapy

Aurore Fraix,[a‡] Ilse Manet,[b‡] Marco Ballestri,[b] Andrea Guerrini,[b] Paolo Dambruoso,[b] Giovanna Sotgiu,[b] Greta Varchi[b,*] Monica Camerin,[c] Olimpia Coppellotti,[c] and Salvatore Sortino [a,*]

[a]*Laboratory of Photochemistry, Department of Drug Sciences, University of Catania, I-95125 Catania, Italy. E-mail: ssortino@unict.it*

[b]*Istituto per la Sintesi Organica e la Fotoreattività-CNR, I-40129, Bologna Italy. E-mail: greta.varchi@isof.cnr.it*

[c]*Department of Biology, University of Padova, via U. Bassi 58/b, 35121 Padova-Italy*

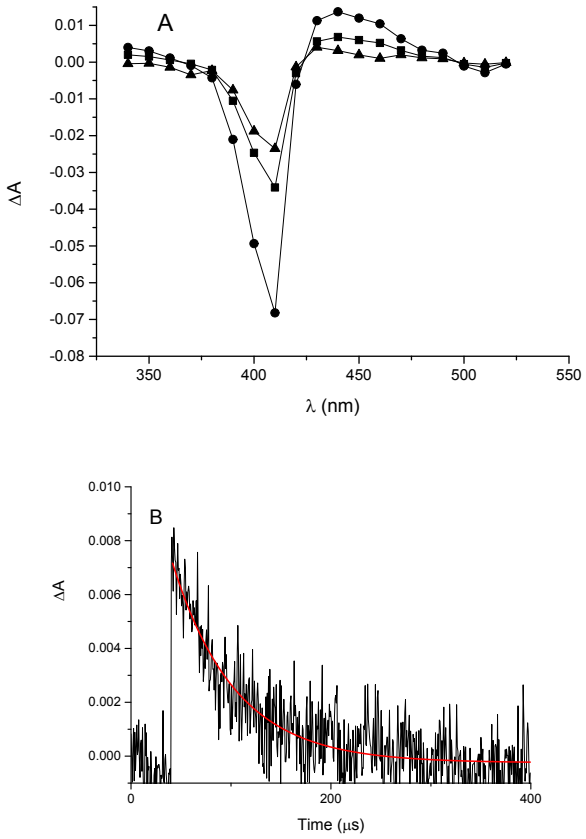


Fig. S1 (A) Transient absorption spectra observed 0.1 μs (ᘐ), 20 μs), 80 μs (O) and 300 μs (①) after 532 nm laser excitation (E_{532} ~ 10 mJ/ pulse) of Ar-saturated aqueous dispersions of NP **1** co-loaded with **2**. (B) Decay trace monitored at 440 nm and the related first-order fitting.

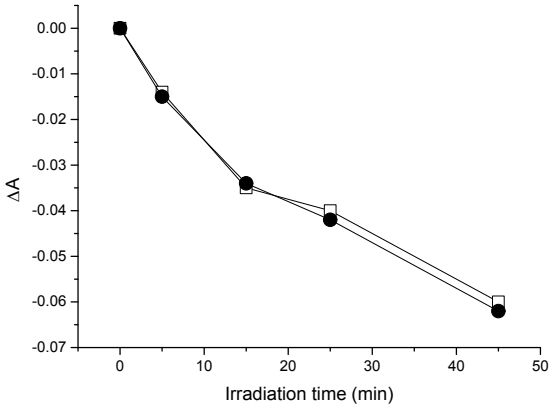


Fig. S2 Absorbance changes observed at 380 nm upon 400 nm light irradiation of NP **1** loaded with **3** (ᔓ), and **2**+**3** (⊠). The data are corrected for the different amount of photons absorbed by the NO photodonor in the two different samples.

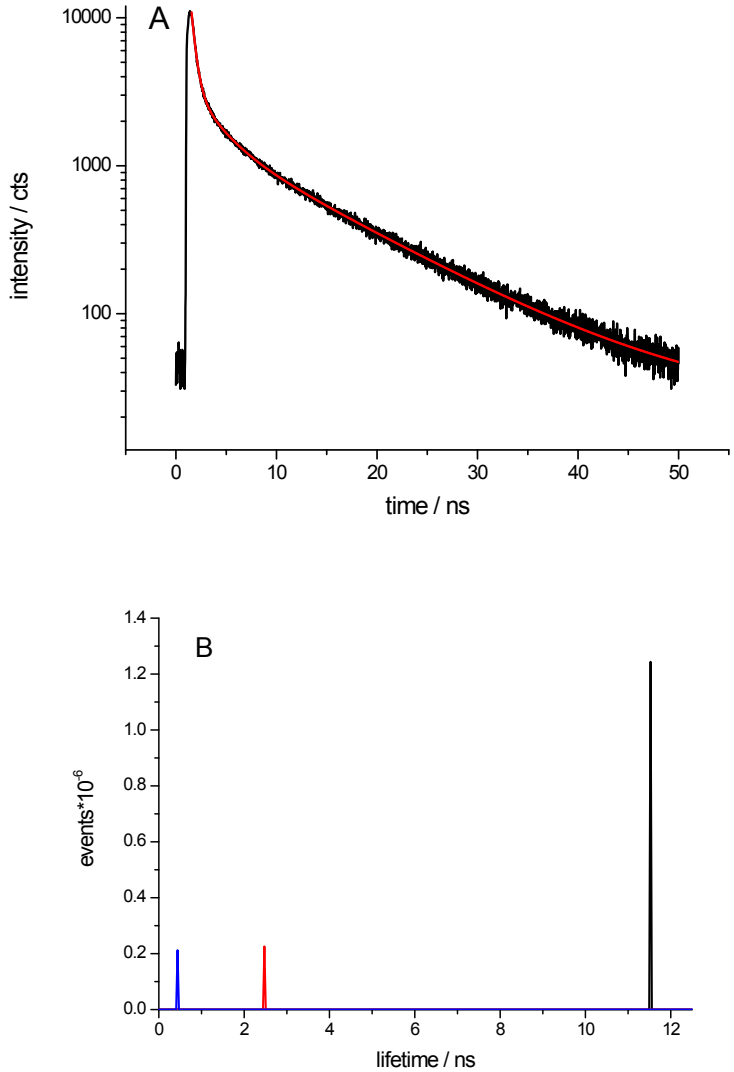


Fig. S3 (A) Decay calculated for ROI comprising both nucleus and cytoplasm; tail-fit with a three-exponential function gave satisfactory results. (B) Histogram of the three lifetimes obtained after fitting of the selected ROI; pre-exponential factors were fitted while the lifetimes were fixed.

Fig. S3

Table S1. Hydrodynamic diameter measurements by dynamic light scattering in mQ water of NPs and NPs loaded with **2** + **3** (five measurements).

Sample	Eff.Diam. (nm)	PDI	Baseline Index	Sample	Eff. Diam. (nm)	PDI	Baseline Index
NPs (1°)	102,73	0,02	8,67	NPs + **2** + **3** (1°)	298,43	0,34	0,00
NPs (2°)	107,00	0,07	4,72	NPs + **2** + **3** (1°)	292,38	0,32	0,00
NPs (3°)	107,84	0,12	8,83	NPs + **2** + **3** (1°)	280,53	0,33	0,00
NPs (4°)	106,18	0,10	8,63	NPs + **2** + **3** (1°)	276,06	0,32	0,00
NPs (5°)	103,10	0,06	0,00	NPs + **2** + **3** (1°)	276,53	0,34	0,00
Mean	105,37	0,08	6,17	Mean	284,79	0,33	0,00
Std Err	1,04	0,02	1,73	Std Err	4,51	0,00	0,00
Std Dev	2,32	0,04	3,86	Std Dev	10,08	0,01	0,00

Table S2. ζ-potential measurements in mQ water of NPs and NPs loaded with **2** + **3** (five measurements).

Sample	Zeta Potential (mV)	Mobility (μ/s)/(V/cm)	RMS Residual	Sample	Zeta Potential (mV)	Mobility (μ/s)/(V/cm)	RMS Residual
NPs	58,49	4,57	2,16E-02	NPs + **2** + **3**	41,76	3,26	1,63E-02
	52,76	4,12	2,31E-02		44,95	3,51	3,17E-02
	50,23	3,92	2,74E-02		41,89	3,27	1,45E-02
	56,05	4,38	3,39E-02		40,60	3,17	1,25E-02
	53,02	4,14	2,63E-02		42,49	3,32	1,62E-02
Mean	54,11	4,23	2,65E-02	Mean	42,34	3,31	1,82E-02
Std Err	1,43	0,11	2,14E-03	Std Err	0,72	0,06	3,44E-03
Std Dev	3,20	0,25	4,79E-03	Std Dev	1,61	0,13	7,69E-03

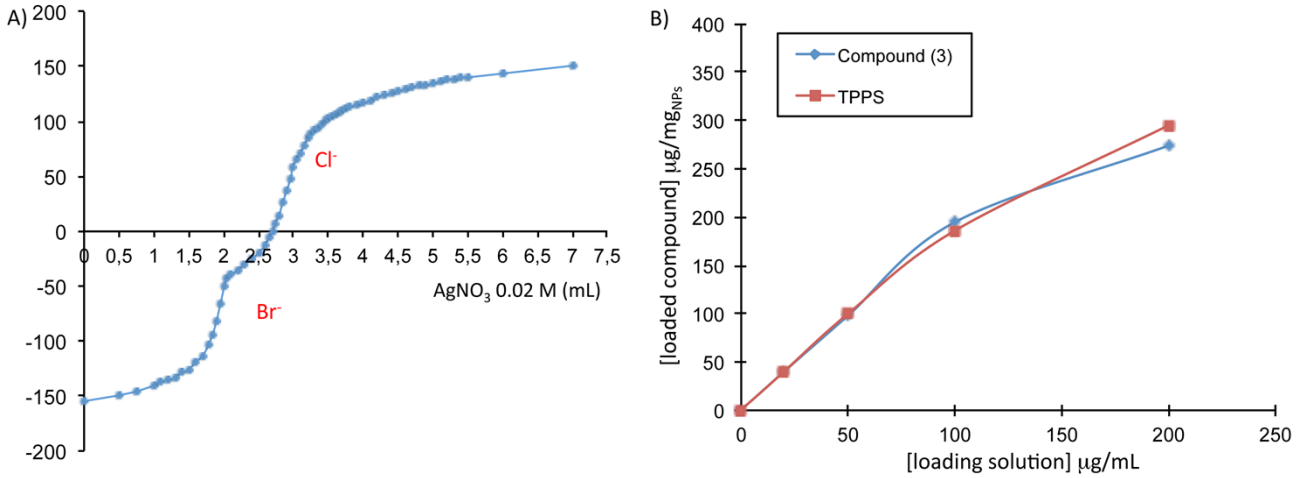
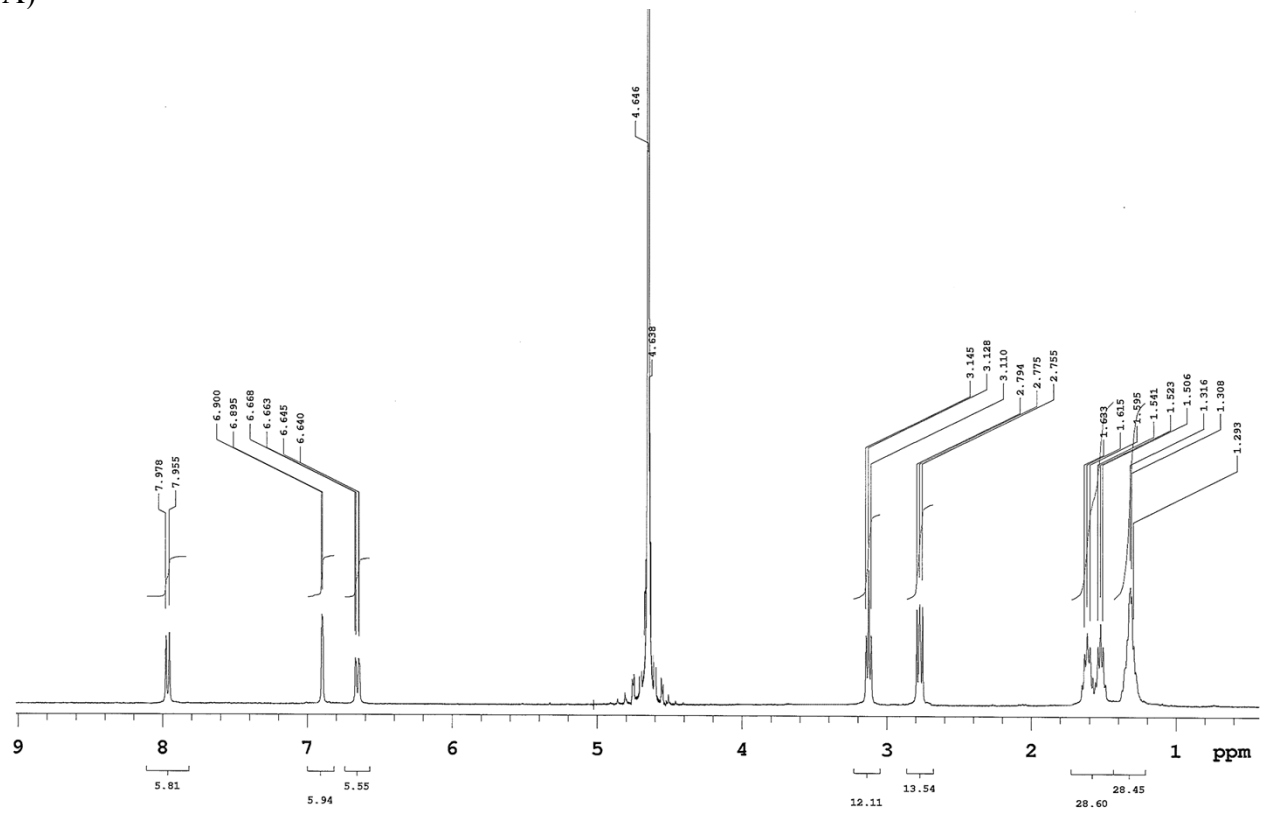


Fig. S4 (A) NPs titration curve and (B) loading calibration curve with TPPS and compound **3**.

A)



B)

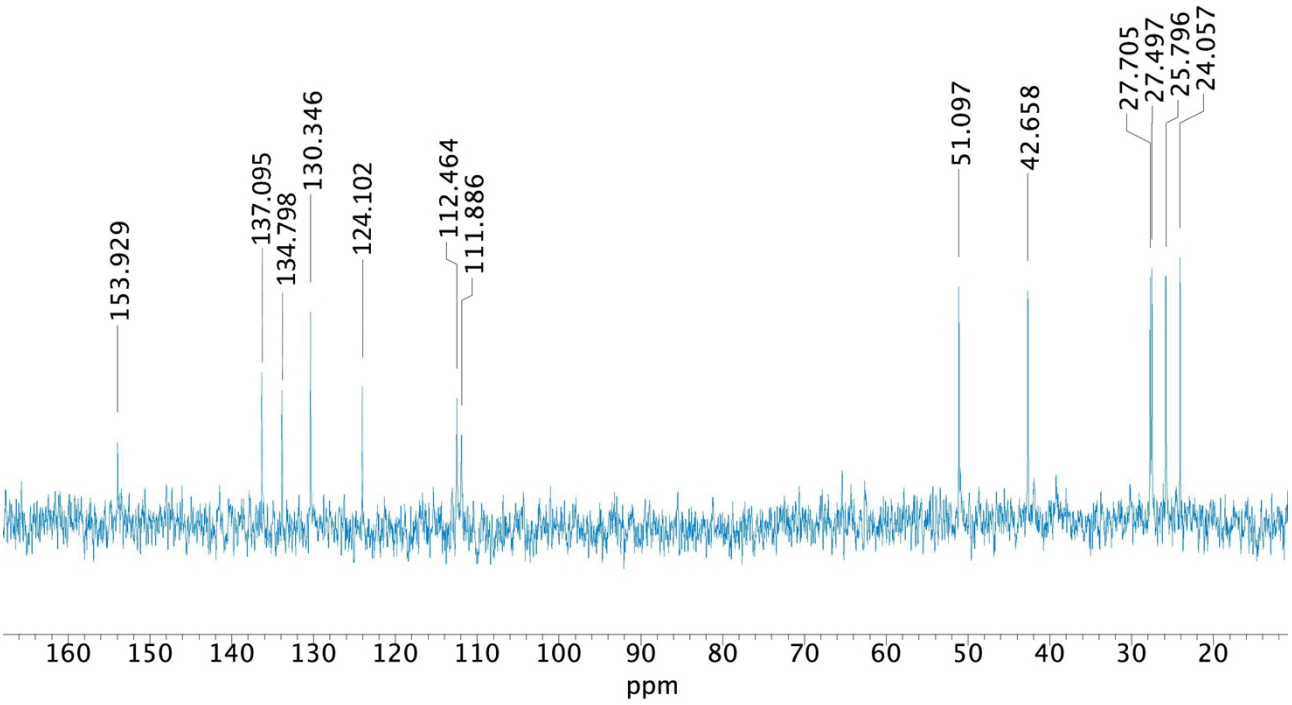


Fig. S5 (A) ^{1}HNMR of compound **3** in D_2O, rt, 400 MHZ. (B) ^{12}CNMR of compound **3** in D_2O, rt, 100 MHZ.

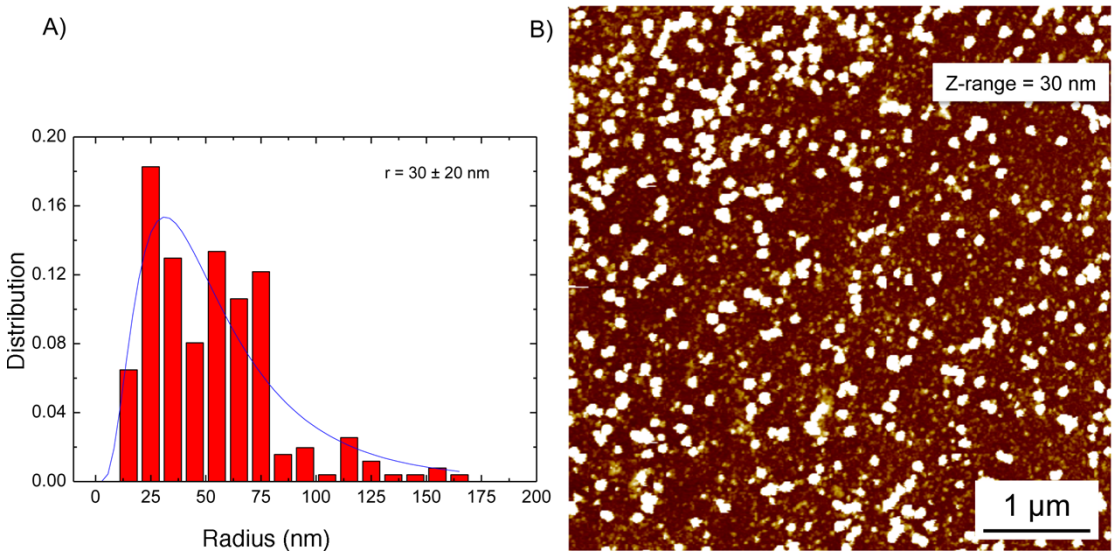


Figure S6. (A) Distribution (%) of nanoparticle radius. B) AFM image of nanospheres deposited on atomic flat silicon Z-range = 14±5 nm