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Supporting Information

Magnetic Driven Nanocarriers for pH-Responsive Doxorubicin Release in Cancer Therapy

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Received: 11 December 2019; Accepted: 10 January 2020; Published: 14 January 2020

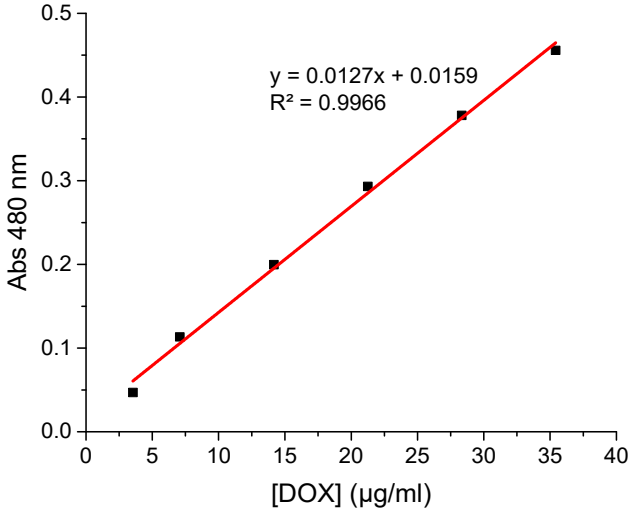

Figure S1. Calibration curve to determine the DOX concentration using UV-Vis spectroscopy at 480 nm.

Table S1. Doxorubicin loading efficiency and nanoparticle capacity at variable DOX concentration (pH = 6, C_{NP} = 1.25 mg/mL).

$[DOX]_{initial}$ (µg/mL)	Efficiency (%)	Capacity (µg DOX/mg NP)
110	37.25 ± 2.23	32.92 ± 1.97
120	50.37 ± 1.75	48.61 ± 1.69
190	55.04 ± 2.89	82.40 ± 4.33
350	43.77 ± 4.30	122.54 ± 12.03

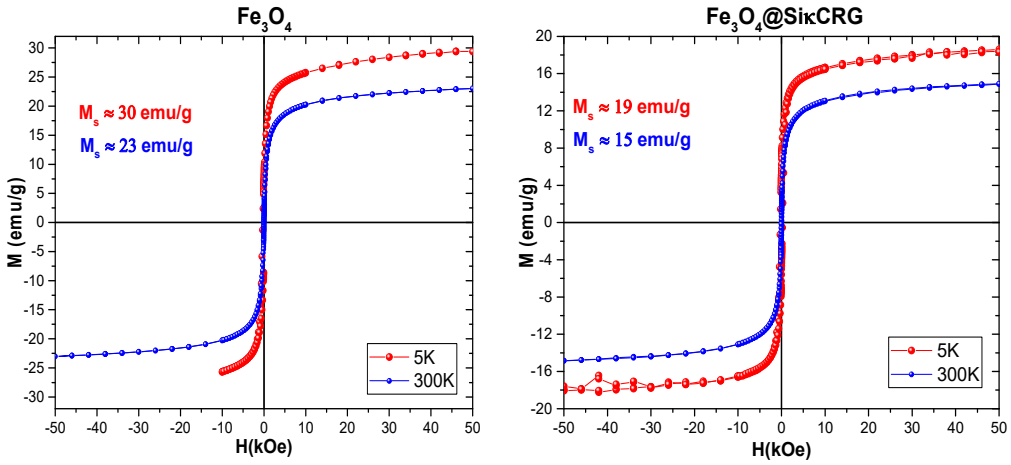

Figure S2. Field Dependent Magnetization Curves (without normalization) of Fe_3O_4 nanoparticles (left) and Fe_3O_4@SiκCRG nanoparticles (right).

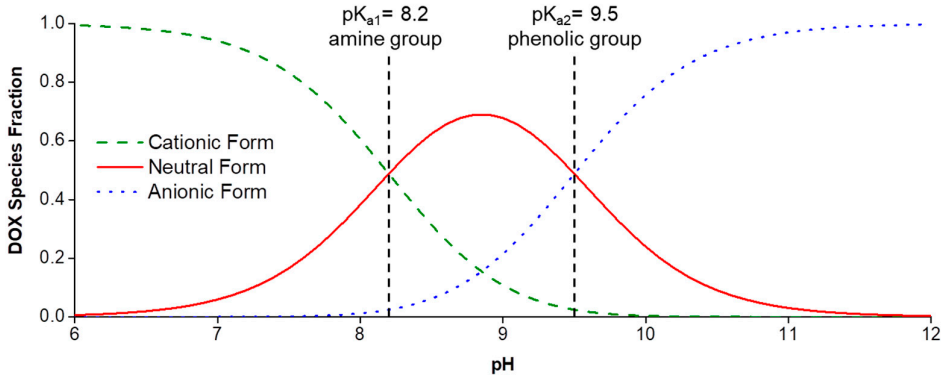

Figure S3. Speciation of DOX.

Release Kinetics Modeling

To analyse the release kinetics, the Weibull model [S1, S2] was fitted to the experimental data. The Weitbull model is described by equation (S1)

$$m = 1 - e^{\left(-\frac{(t-T_i)^{\beta}}{\alpha}\right)} \quad \text{(equation S1)}$$

where m is the cummulative fraction of released drug (0 to 1), t is the release time, α is the time process,Ti is the lag time, in most cases zero, and β, the shape parameter, characterizes the curve as exponential (b = 1), S-shaped with upward curve followed by turning point (b > 1), or parabolic with higher initial slope, after that consistent with the exponential (b < 1).

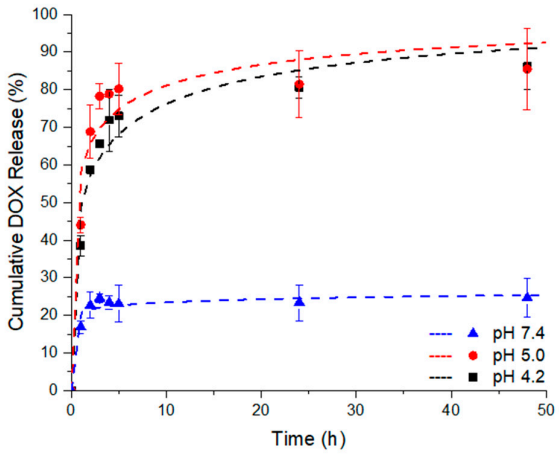

Figure S4. Doxorubicin release profiles over 48 hours, with corresponding fitting using the Weibull model.

Table S2. Parameters α and β, as estimated from the application of the Weibull model to the DOX release data, and coefficient of determination (R^2).

Parameter	pH 4.2	pH 5.0	pH 7.4
α	1.473	1.127	4.296
β	0.324	0.272	0.058
R^2	0.9576	0.9262	0.9468

References

1. Langenbucher, F. Linearization of dissolution curves by the Weibull distribution. *J. Pharm. Pharmacol.* **1972**, *24*, 979–981.
2. Costa, P.; Sousa Lobo, M.J. Modeling and comparison of dissolution profile. *Eur. J. Pharm. Sci.* **2001**, *13*, 123–133.