Electronic Supplementary Material (ESI) for New Journal of Chemistry.

AMF-responsive doxorubicin loaded β-cyclodextrin-decorated superparamagnetic nanoparticles

Evelyn C. S. Santos, Amanda Watanabe, Maria D. Vargas, Marcelo N. Tanaka, Flavio Garcia, Célia M. Ronconi*

cmronconi@id.uff.br

Supporting Information

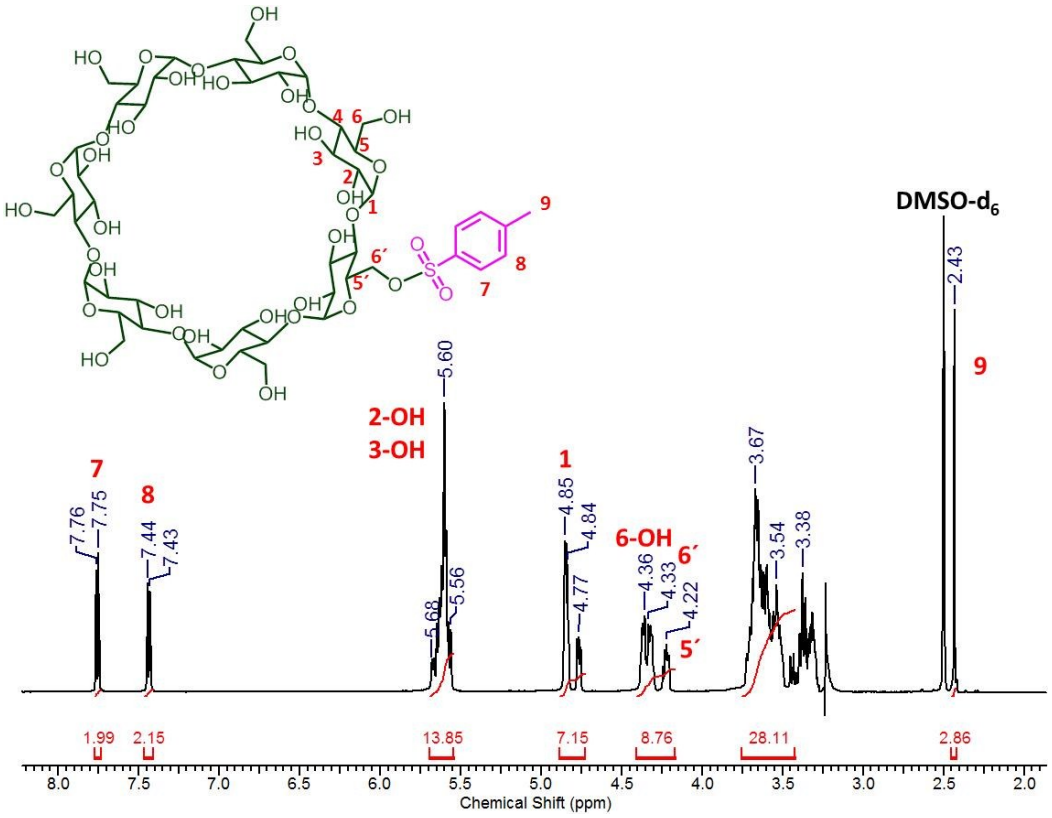

Fig. S1 ^{1}H NMR spectrum of the βCD-Ts (DMSO-d_6, 298 K, 500 MHz).

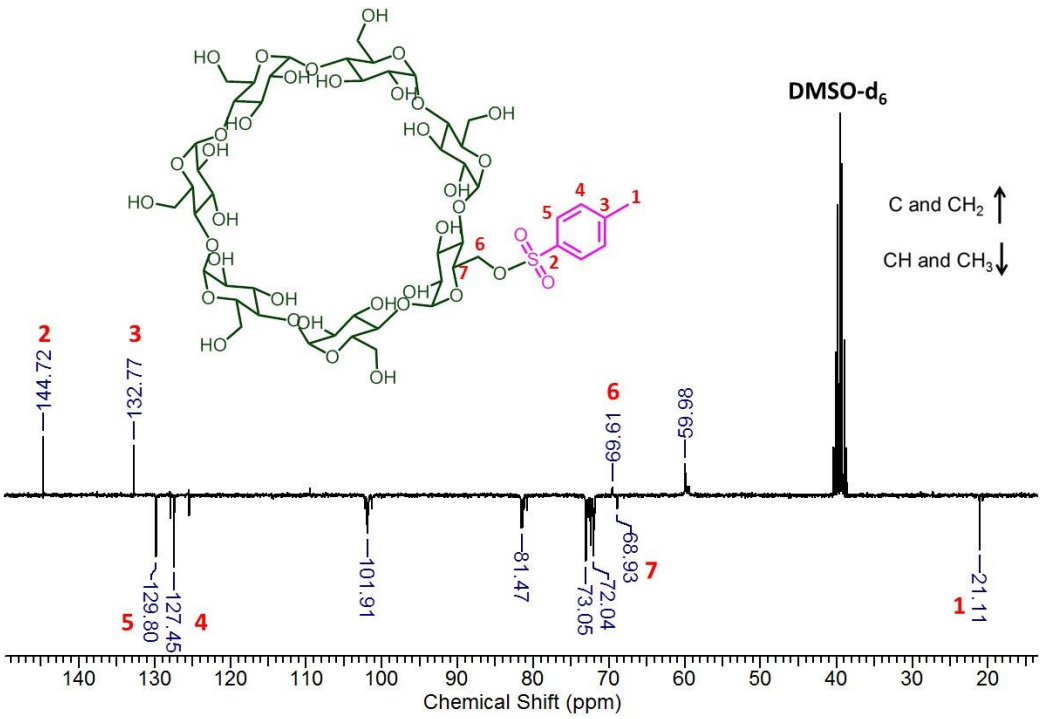

Fig. S2 ^{13}C NMR Attached Pronton Test (APT) spectrum of the βCD-Ts (DMSO-d_6, 298 K, 75 MHz).

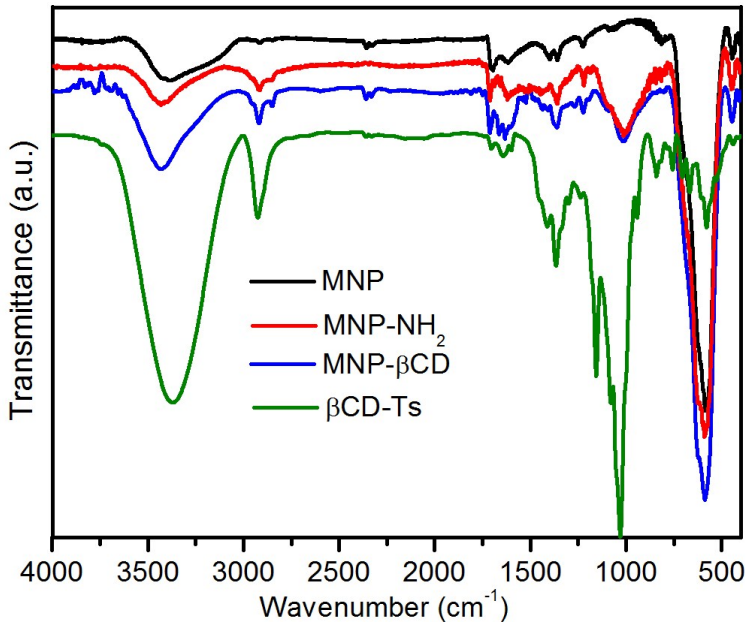

Fig. S3 FTIR spectra of the MNP-βCD and its precursors.

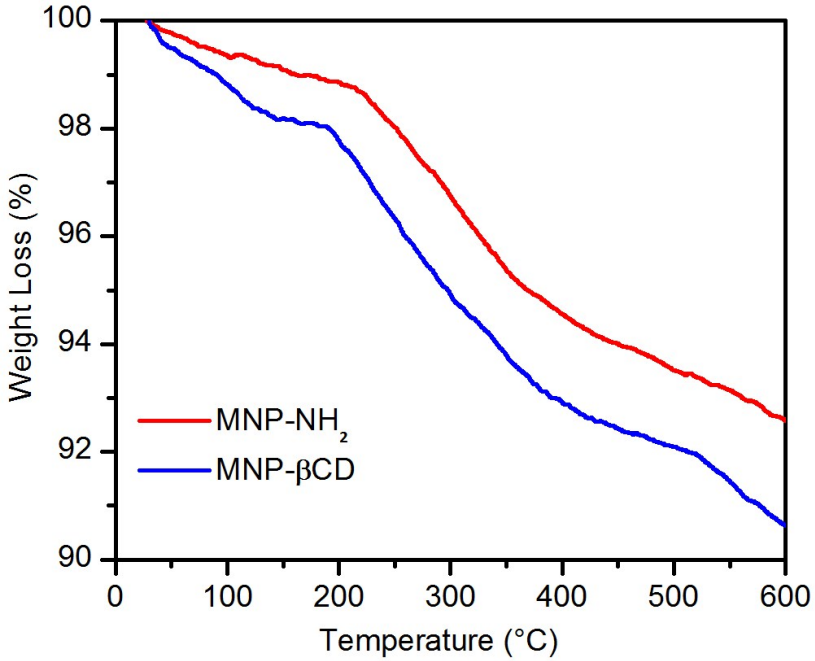

Fig. S4 TGA curves of the nanocarrier MNP-βCD and its precursor.

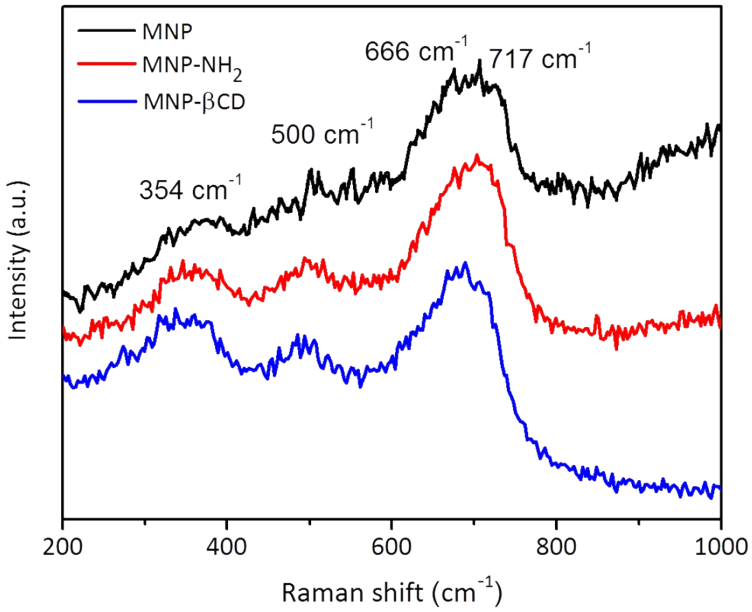

Fig. S5 Raman spectra of the nanocarrier MNP-βCD and its precursors.

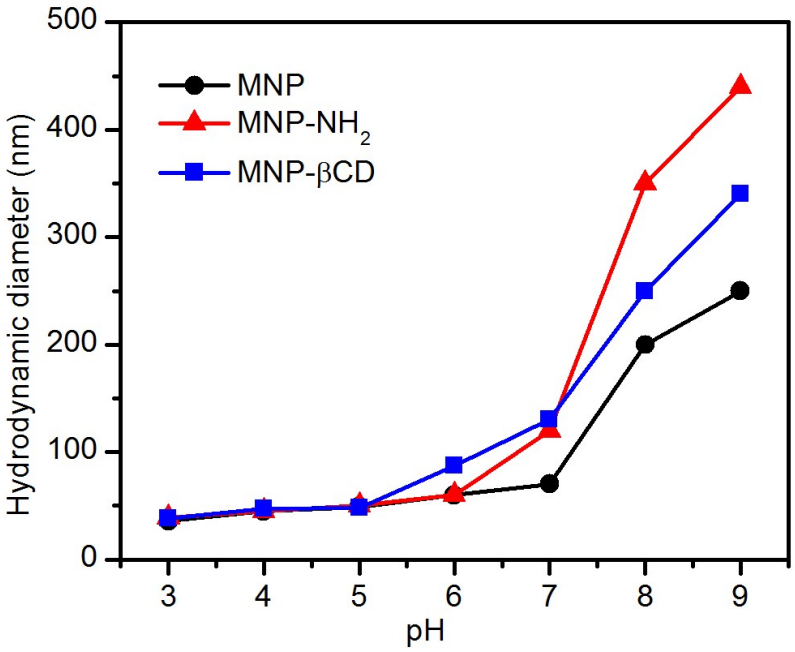

Fig. S6 Hydrodynamic diameters as function of pH (3 to 9) for MNP, MNP-NH_2 and MNP-βCD.

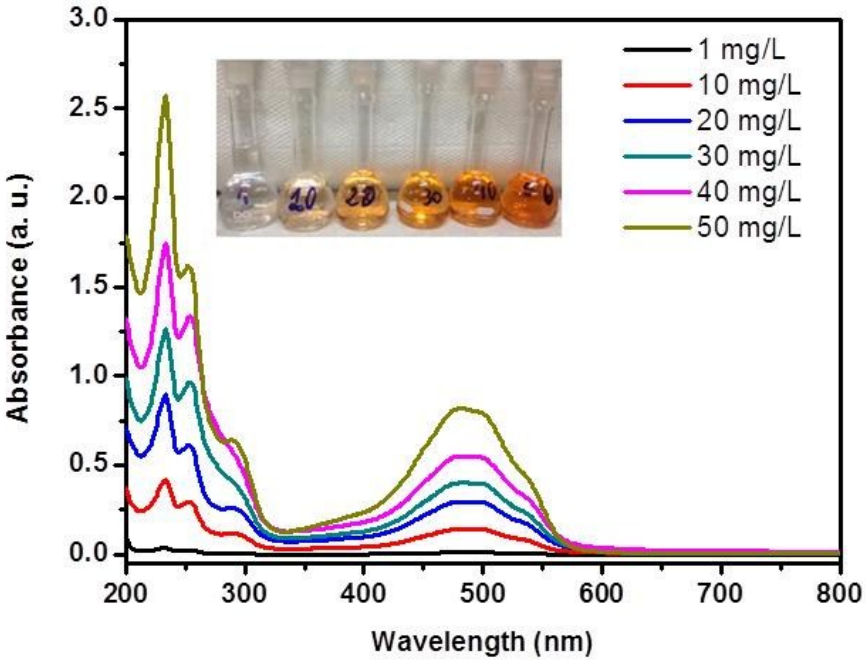

Fig. S7 Absorption spectra of DOX solutions in PBS buffer (pH = 7.4) obtained at 298 K.

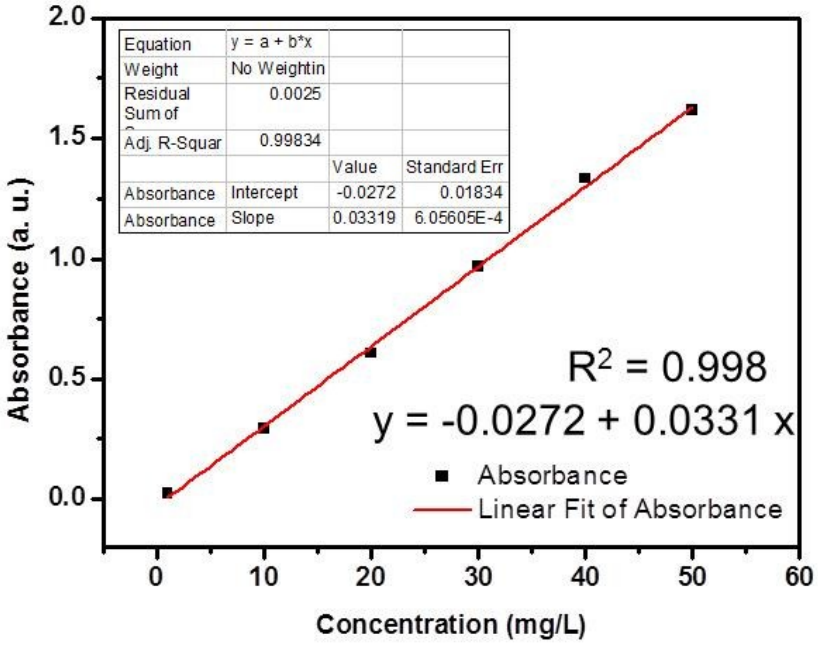

Fig. S8 The standard curve of DOX obtained from Fig. S7 using the absorption maximum at λ = 254 nm. This standard curve was used to estimate the amount of doxorubicin loaded and released from the nanocarrier MNP-βCD.

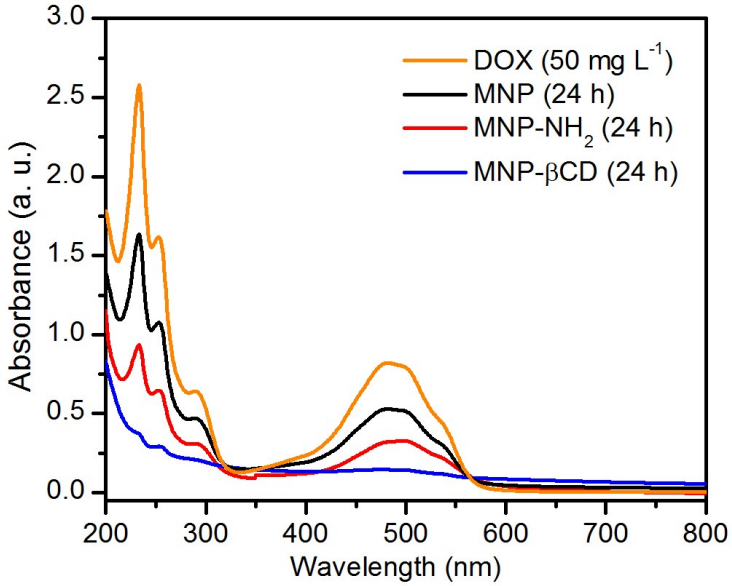

Fig. S9 Absorption spectra of DOX solutions in PBS buffer (pH = 7.4) obtained after a period of 24 h in contact with MNP, MNP-NH_2 and MNP-βCD, respectively, at RT under shaking (160 rpm).

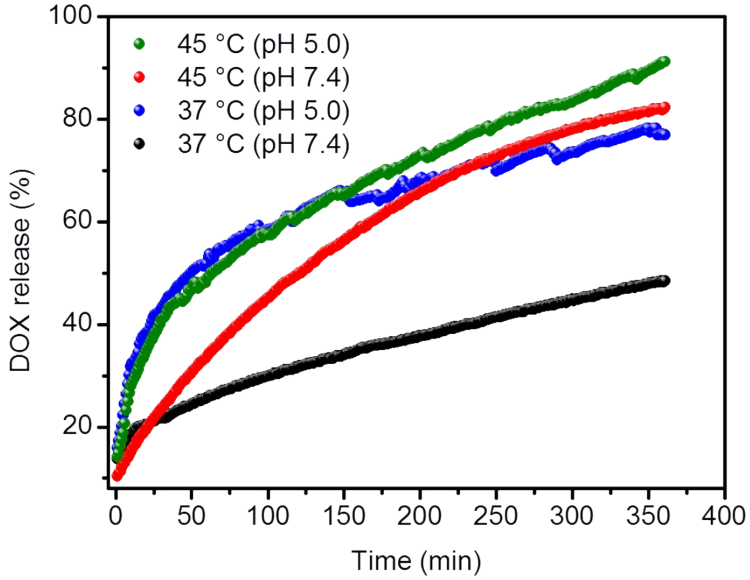

Fig. S10 DOX release profiles from the nanocarrier MNP-βCD-DOX (10 mg mL^{-1}) in the absence of AMF monitored at λ = 254 nm using UV-Vis spectroscopy.

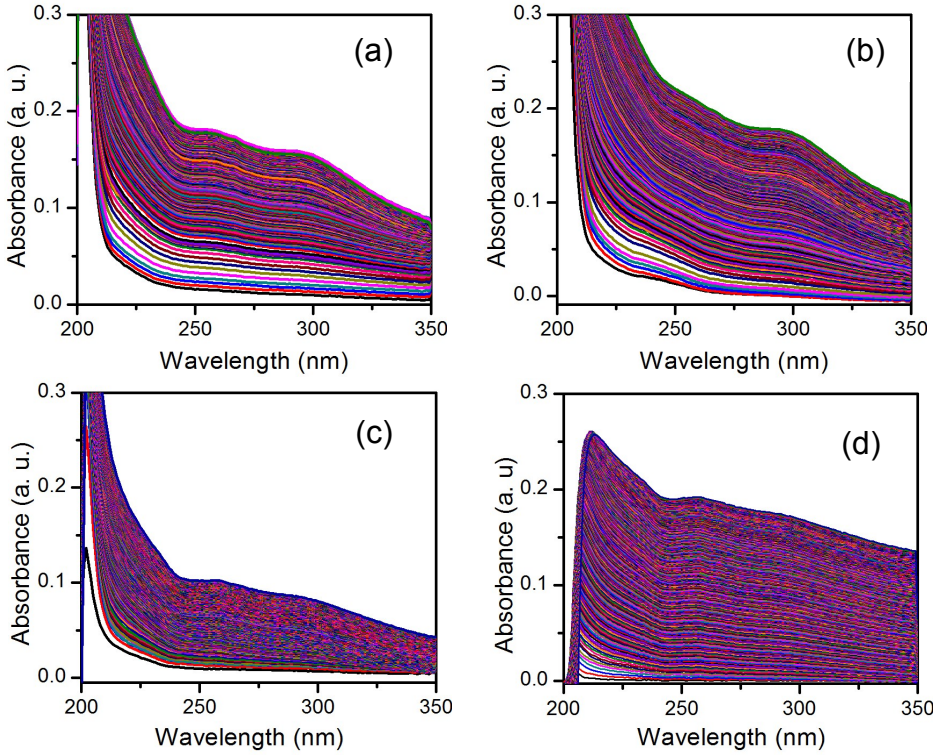

Fig. S11: Absorption spectra of DOX released from the loaded MNP-βCD after 6 h in the absence of AMF in PBS buffer (a) at 37 °C (pH = 5.0); (b) at 45 °C (pH = 5.0); (c) at 37° (pH = 7.4) and (d) at 45 °C (pH = 7.4).

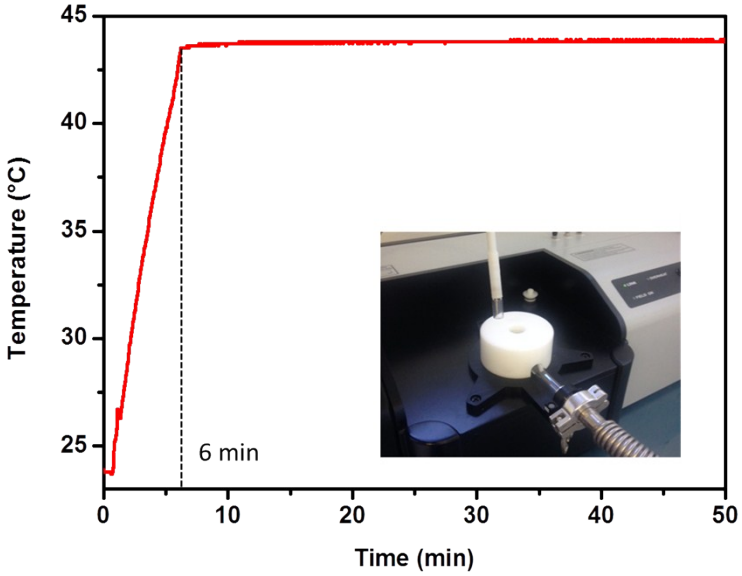

Fig. S12: The magnetic heating curve as function of time obtained by applying AMF (*f* = 307 KHz) upon loaded MNP-βCD (10 mg mL^{-1}) during 50 min. Up to 6 min the magnetic field (*H)* was 200 Oe, and then was oscillated to maintain the temperature fixed at 45 °C (± 1) along the experiment. The same profile of heating curve was obtained for the measurements with 10, 20, 30 and 40 min of duration.