

Supplementary Information

Graphene oxide and oxidized carbon nanodiscs as biomedical scaffolds for the targeted delivery of quercetin to cancer cells

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Table S1. Lorentzian peak fitting parameters for the first-order Raman bands of graphite, GO, and GO_Q. $\Delta\tilde{\nu}$ = Raman shift/band position; FWHM = Full width at half maximum; I = Band intensity.

Sample	First-order Raman bands				
	Second-order Raman bands				
	D*	D	D''	G	D'
Graphite	-	$\Delta\tilde{\nu} = 1352 \text{ cm}^{-1}$ FWHM = 34 cm^{-1} $I = 2401$	-	$\Delta\tilde{\nu} = 1582 \text{ cm}^{-1}$ FWHM = 20 cm^{-1} $I = 17519$	-
GO	$\Delta\tilde{\nu} = 1127 \text{ cm}^{-1}$ FWHM = 684 cm^{-1} $I = 1973$	$\Delta\tilde{\nu} = 1347 \text{ cm}^{-1}$ FWHM = 126 cm^{-1} $I = 25968$	$\Delta\tilde{\nu} = 1511 \text{ cm}^{-1}$ FWHM = 125 cm^{-1} $I = 5485$	$\Delta\tilde{\nu} = 1575 \text{ cm}^{-1}$ FWHM = 58 cm^{-1} $I = 20187$	$\Delta\tilde{\nu} = 1604 \text{ cm}^{-1}$ FWHM = 35 cm^{-1} $I = 11083$
GO_Q	$\Delta\tilde{\nu} = 1198 \text{ cm}^{-1}$ FWHM = 299 cm^{-1} $I = 939$	$\Delta\tilde{\nu} = 1343 \text{ cm}^{-1}$ FWHM = 77 cm^{-1} $I = 19306$	$\Delta\tilde{\nu} = 1501 \text{ cm}^{-1}$ FWHM = 115 cm^{-1} $I = 2924$	$\Delta\tilde{\nu} = 1573 \text{ cm}^{-1}$ FWHM = 50 cm^{-1} $I = 15999$	$\Delta\tilde{\nu} = 1606 \text{ cm}^{-1}$ FWHM = 26 cm^{-1} $I = 5362$

Table S2.

peak fitting
for the
order
bands of
GO, and
= Raman
position;
Full width
maximum;
intensity.

	G' (2D)	D+G (D+D')	2G (2D')
Graphite	$\Delta\tilde{\nu} = 2708 \text{ cm}^{-1}$ FWHM = 69 cm^{-1} $I = 10553$	-	-
GO	$\Delta\tilde{\nu} = 2682 \text{ cm}^{-1}$ FWHM = 297 cm^{-1} $I = 3301$	$\Delta\tilde{\nu} = 2918 \text{ cm}^{-1}$ FWHM = 239 cm^{-1} $I = 4084$	$\Delta\tilde{\nu} = 3158 \text{ cm}^{-1}$ FWHM = 135 cm^{-1} $I = 1023$
GO_Q	$\Delta\tilde{\nu} = 2677 \text{ cm}^{-1}$ FWHM = 214 cm^{-1} $I = 3428$	$\Delta\tilde{\nu} = 2919 \text{ cm}^{-1}$ FWHM = 154 cm^{-1} $I = 2565$	$\Delta\tilde{\nu} = 3153 \text{ cm}^{-1}$ FWHM = 190 cm^{-1} $I = 697$

Lorentzian
parameters
second-
Raman
graphite,
GO_Q. $\Delta\tilde{\nu}$
shift/band
FWHM =
at half
 $I = \text{Band}$

Table S3. Lorentzian peak fitting parameters for the first-order Raman bands of CNDs, oxCNDs, and oxCNDs_Q. $\Delta\tilde{\nu}$ = Raman shift/band position; FWHM = Full width at half maximum; I = Band intensity.

Sample	First-order Raman bands				
	D* (D+D')	D	G' (2D)	D''	2G (2D')
CNDs	$\Delta\tilde{\nu} = 1232 \text{ cm}^{-1}$ FWHM = 448 cm^{-1} $I = 43$	$\Delta\tilde{\nu} = 1348 \text{ cm}^{-1}$ FWHM = 148 cm^{-1} $I = 143$	$\Delta\tilde{\nu} = 1463 \text{ cm}^{-1}$ FWHM = 125 cm^{-1} $I = 44$	$\Delta\tilde{\nu} = 1572 \text{ cm}^{-1}$ FWHM = 57 cm^{-1} $I = 340$	$\Delta\tilde{\nu} = 1514 \text{ cm}^{-1}$ FWHM = 70 cm^{-1} $I = 57$
oxCNDs	$\Delta\tilde{\nu} = 1130 \text{ cm}^{-1}$ FWHM = 158 cm^{-1} $I = 62$	$\Delta\tilde{\nu} = 1355 \text{ cm}^{-1}$ FWHM = 186 cm^{-1} $I = 1221$	$\Delta\tilde{\nu} = 1524 \text{ cm}^{-1}$ FWHM = 120 cm^{-1} $I = 348$	$\Delta\tilde{\nu} = 1584 \text{ cm}^{-1}$ FWHM = 65 cm^{-1} $I = 861$	$\Delta\tilde{\nu} = 1616 \text{ cm}^{-1}$ FWHM = 48 cm^{-1} $I = 871$
oxCNDs_Q	$\Delta\tilde{\nu} = 1225 \text{ cm}^{-1}$ FWHM = 338 cm^{-1} $I = 87$	$\Delta\tilde{\nu} = 1351 \text{ cm}^{-1}$ FWHM = 129 cm^{-1} $I = 354$	$\Delta\tilde{\nu} = 1481 \text{ cm}^{-1}$ FWHM = 164 cm^{-1} $I = 121$	$\Delta\tilde{\nu} = 1584 \text{ cm}^{-1}$ FWHM = 80 cm^{-1} $I = 339$	$\Delta\tilde{\nu} = 1617 \text{ cm}^{-1}$ FWHM = 60 cm^{-1} $I = 133$

	FWHM = 168 cm ⁻¹ <i>I</i> = 26	FWHM = 64 cm ⁻¹ <i>I</i> = 379	FWHM = 386 cm ⁻¹ <i>I</i> = 37	FWHM = 63 cm ⁻¹ <i>I</i> = 20
oxCNDs	-	$\Delta\tilde{\nu}$ = 2704 cm ⁻¹ FWHM = 427 cm ⁻¹ <i>I</i> = 270	$\Delta\tilde{\nu}$ = 2946 cm ⁻¹ FWHM = 310 cm ⁻¹ <i>I</i> = 304	$\Delta\tilde{\nu}$ = 3185 cm ⁻¹ FWHM = 164 cm ⁻¹ <i>I</i> = 113
oxCNDs_Q	$\Delta\tilde{\nu}$ = 2469 cm ⁻¹ FWHM = 175 cm ⁻¹ <i>I</i> = 29	$\Delta\tilde{\nu}$ = 2692 cm ⁻¹ FWHM = 124 cm ⁻¹ <i>I</i> = 137	$\Delta\tilde{\nu}$ = 2919 cm ⁻¹ FWHM = 254 cm ⁻¹ <i>I</i> = 74	$\Delta\tilde{\nu}$ = 3142 cm ⁻¹ FWHM = 130 cm ⁻¹ <i>I</i> = 15

Table S4. Lorentzian peak fitting parameters for the second-order Raman bands of CNDs, oxCNDs, and oxCNDs_Q. $\Delta\tilde{\nu}$ = Raman shift/band position; FWHM = Full width at half maximum; *I* = Band intensity.

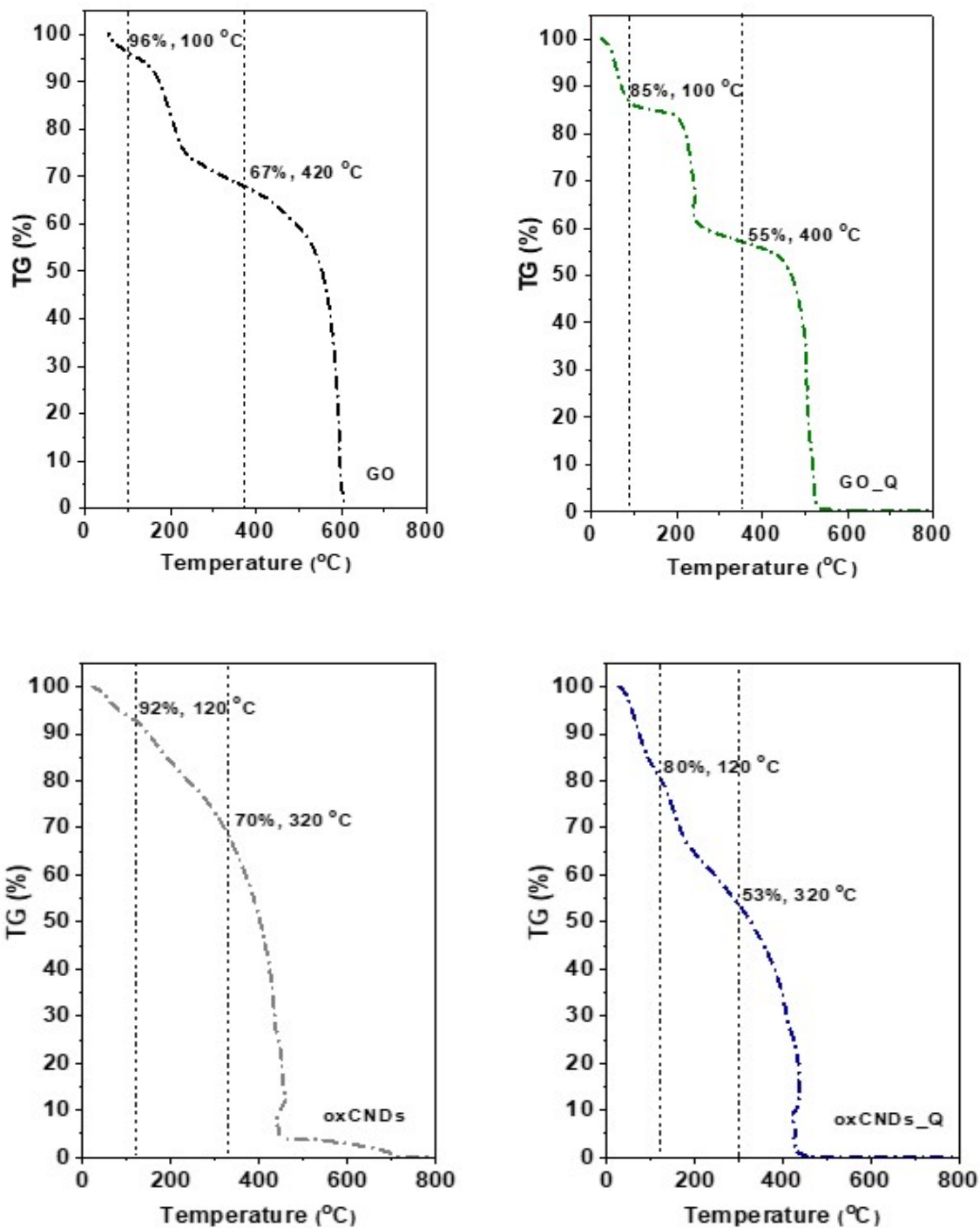


Figure S1. TGA thermographs of GO, GO_Q, oxCNDs and oxCNDs_Q.

UV-Vis spectra were collected on a Shimadzu UV-2401PC two-beam spectrophotometer in the range of 200–800 nm, with steps of 0.5 nm, using a combination of deuterium and halogen lamps as sources.

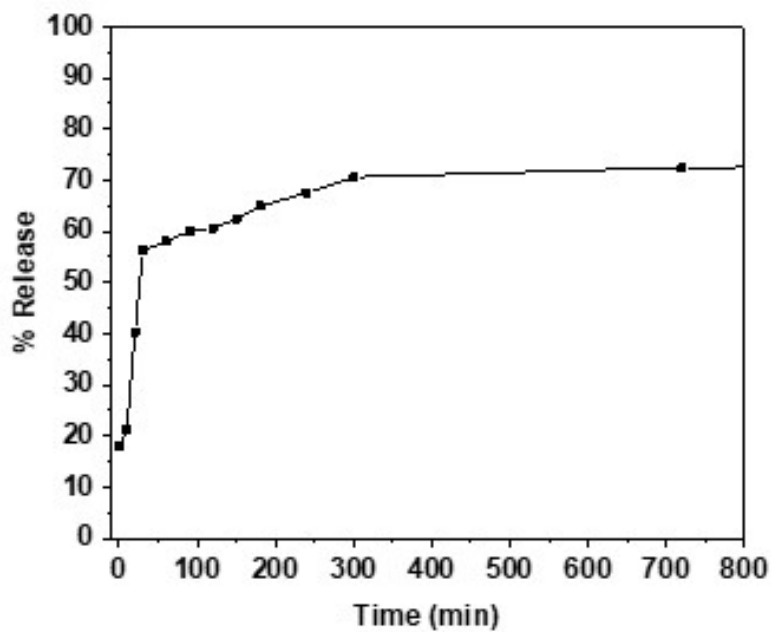


Figure S2. Release profile of oxCNDs_Q