Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary information

Amphiphilic carbon dots as versatile vector for nucleic acid and drug delivery

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Table S1. The C, N and H content of CD by elemental analysis.

	C (%)	N (%)	H (%)
PEI-CD	48.6	27.5	11.1
ACD	62.9	7.8	11.8

Table S2. Quantum yield of PEI-CD and ACD at various λ_{ex} (Quinine sulfate in 0.10 M of H_2SO_4 with quantum yield of 54% was selected as standard sample).

	350 nm	360 nm	370 nm
PEI-CD	10.2%	10.2%	8.6%
ACD	3.0%	2.7%	2.1%

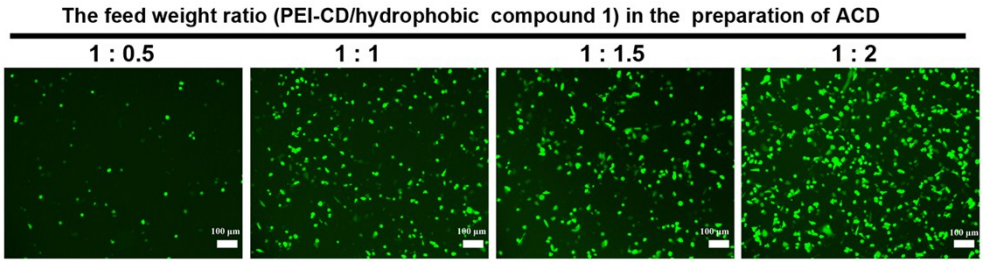

Fig. S1. The gene expression of enhanced green fluorescent protein (EGFP) in A549 cells mediated by ACD which was prepared by different feed weight ratio between PEI-CD and 2-((dodecyloxy)methyl)oxirane **1**. The ACD/DNA weight ratio is 2. Scale bar = 100 μm.

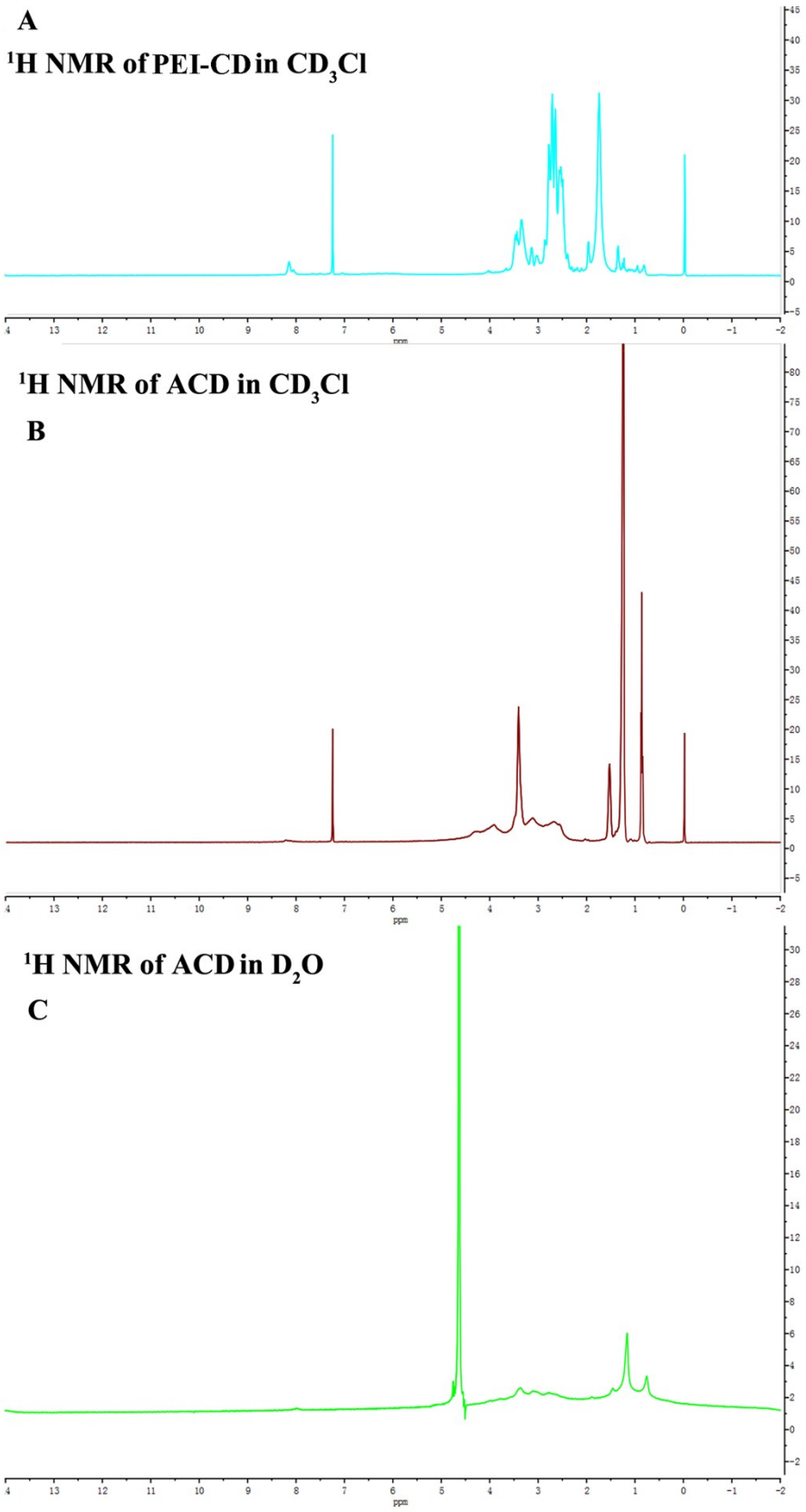

Fig. S2. [1]H NMR spectra of PEI-CD and ACD.

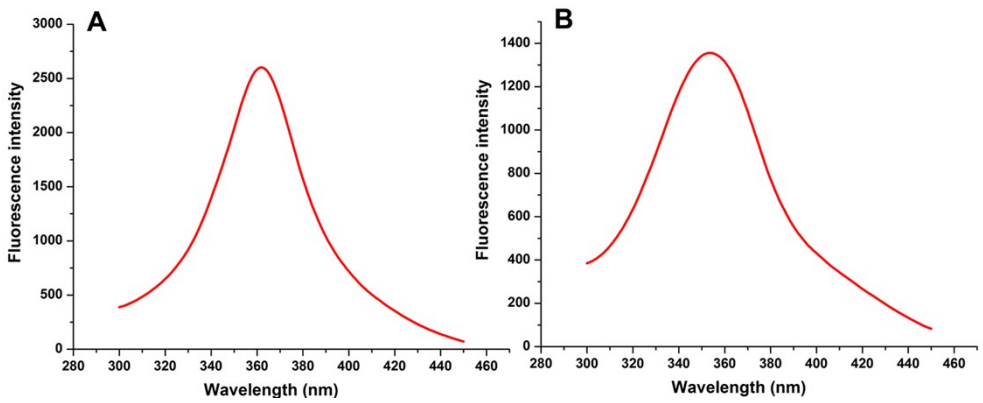

Fig. S3. Excitation spectra of (A) ACD and (B) PEI-CD at λ_{em} of 460 nm.

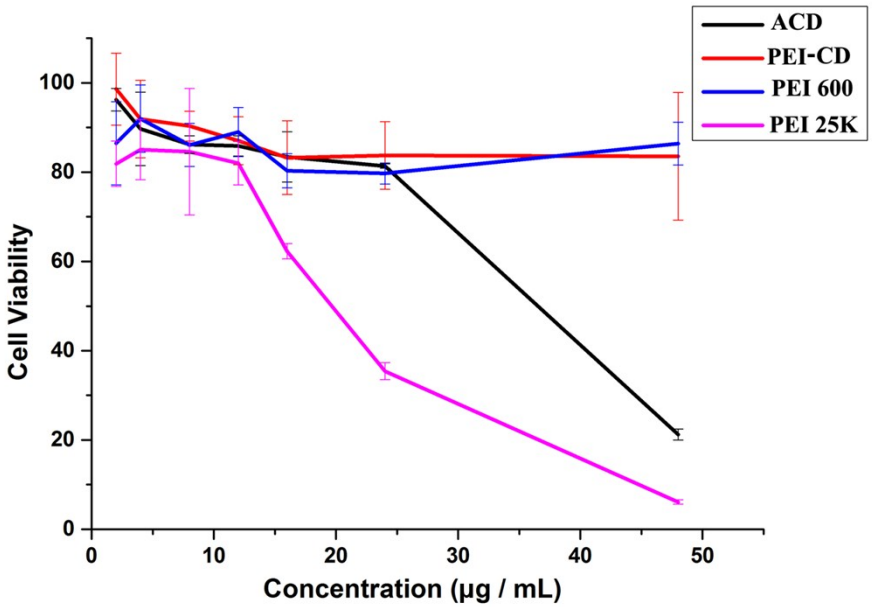

Fig. S4. Relative cell viabilities of materials at different concentration toward A549 cells; 25 KDa PEI was used as control. Data represent mean ± SD (n = 3).

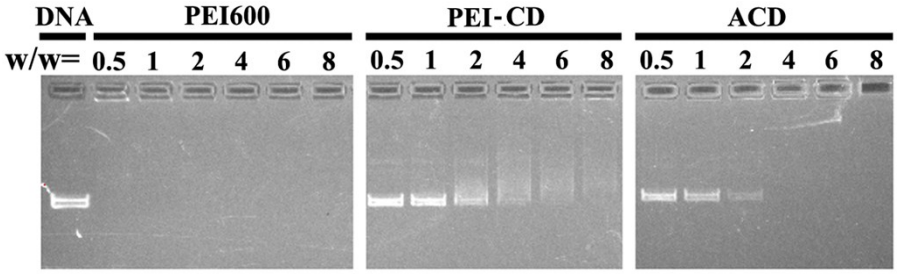

Fig. S5. Agarose gel electrophoresis of DNA complexes with different materials at various w/w ratios.

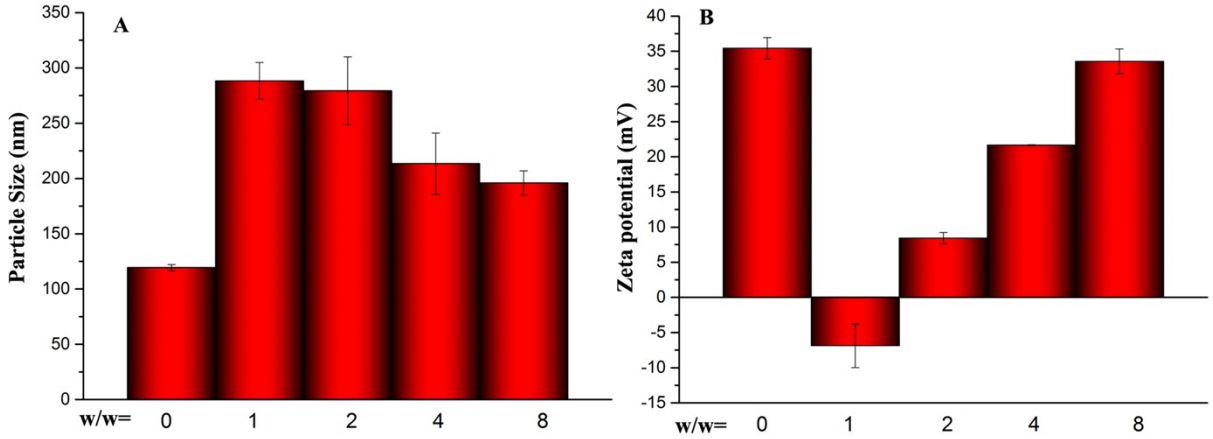

Fig. S6. Average particle size (A) and zeta-potential (B) of ACD/DNA complexes at different weight ratios. A mass ratio of 0 means blank ACD. (Data represent mean ± SD, n = 3).

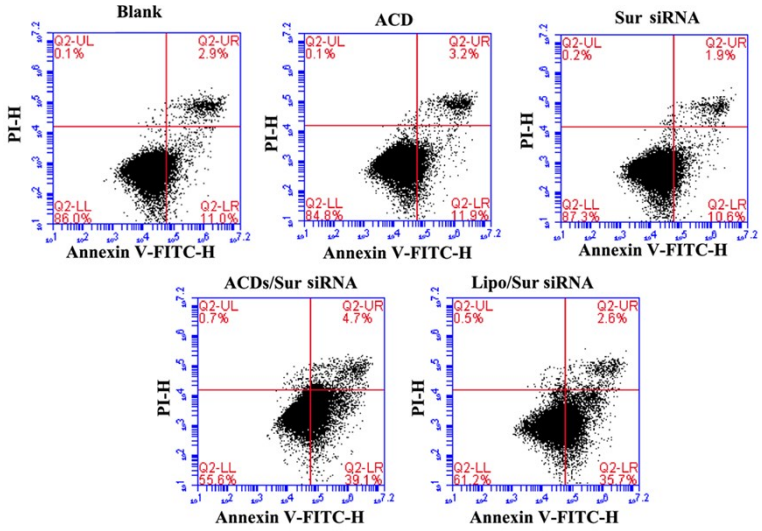

Fig. S7. Original flow cytometry diagrams related to Fig. 6B.

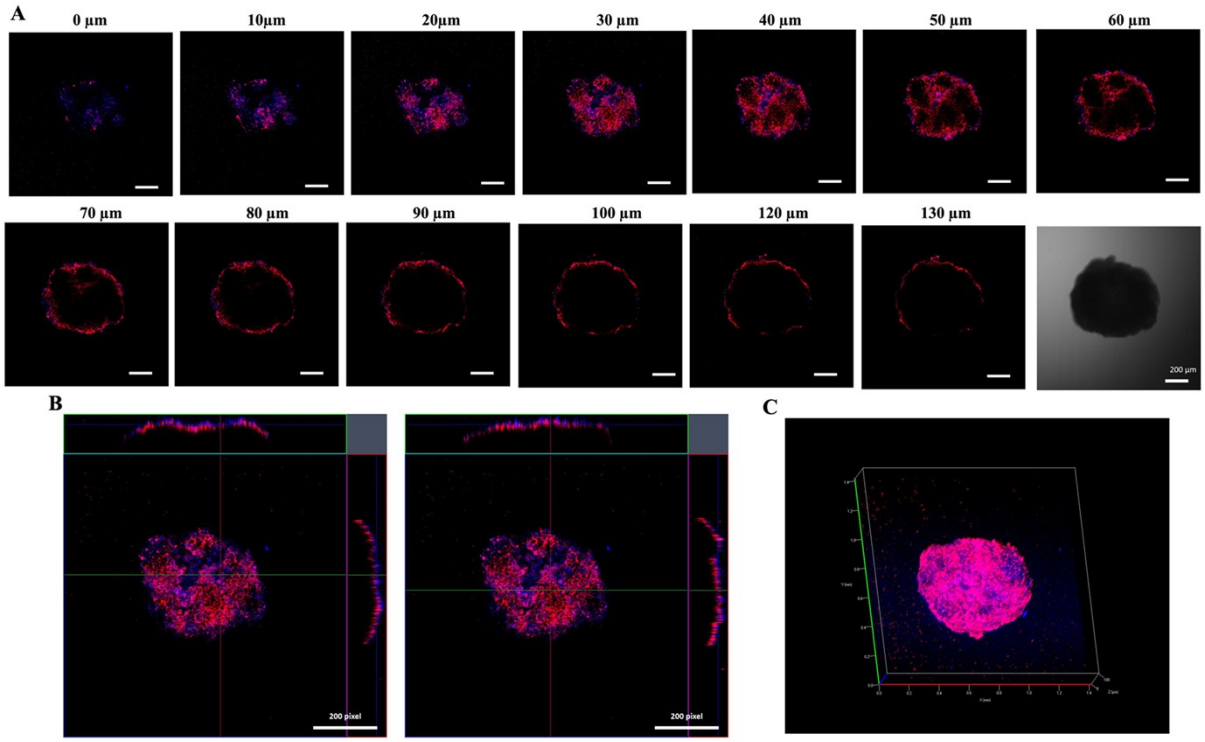

Fig. S8. Confocal laser microscopy images of the 3D multicellular spheroid after transfecting ACD/Alexa Fluor™ 555 labeled–siRNA complexes. (A) Z-stack images of the 3D spheroid. (B) Cross-section images of X and Y-axis. (C) Three-dimensional reconstruction. The scale bar is 200 µm.

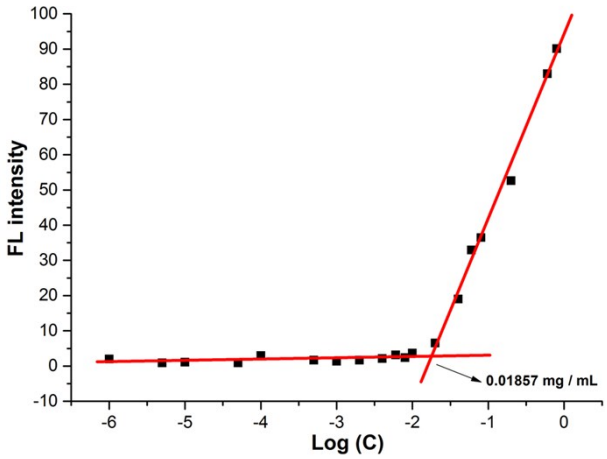

Fig. S9. Critical micelle concentration determination: Fluorescence intensity at emission = 630 nm of Nile red as function of logarithm of the ACD concentrations in water.

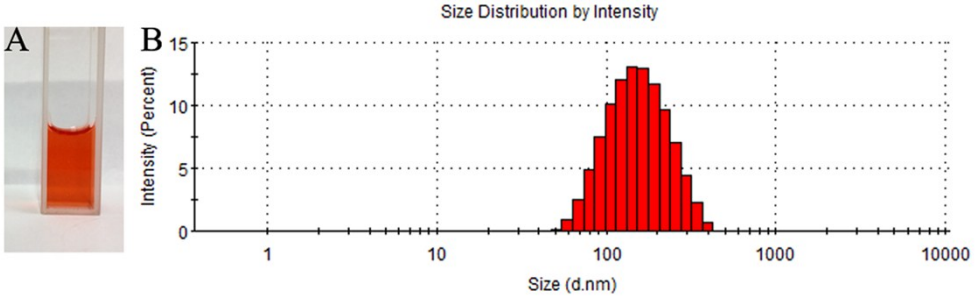

Fig. S10. (A) Aqueous DOX@ACD solutions. (B) Particle size of DOX@ACD by DLS.