Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Bio-inspired Janus composite nanoscroll for on-demand tumor targeting

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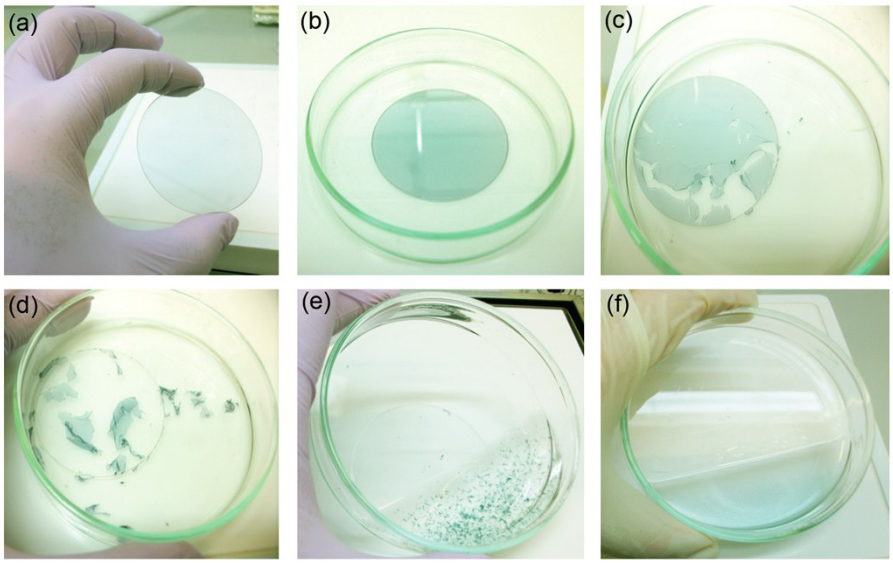

Fig. S1 Optical photographs of sequential synthetic process of Janus composite nanosheets. Au deposition on a Chi-coated glass substrate (a), Gum arabic-functionalization on Au surface (b), liquid exfoliation in acetic acid solution (c-e), and sonicated JCNs (f).

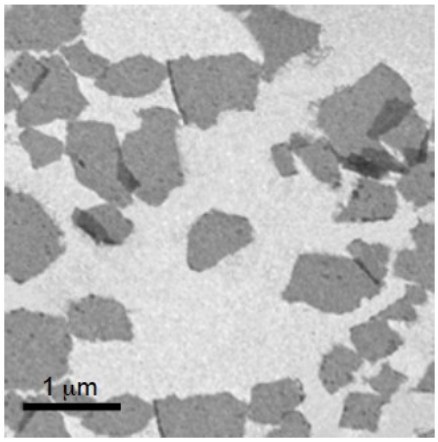

Fig. S2 TEM image of unscrolled Janus nanosheets at pH 5 from scrolled form at pH 10.

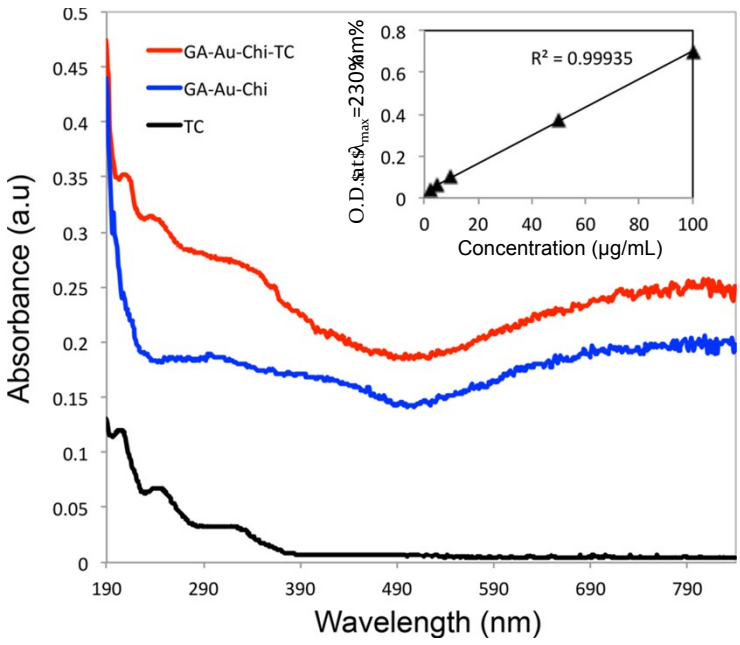

Fig. S3 UV-vis absorption spectra of terephthaloyl chloride (TC)-conjugated nanosheets. The unbound TC molecules in supernatant solution of the correspondant sample (black curve) were quantitated, by a spectrometrical calibration (inset).

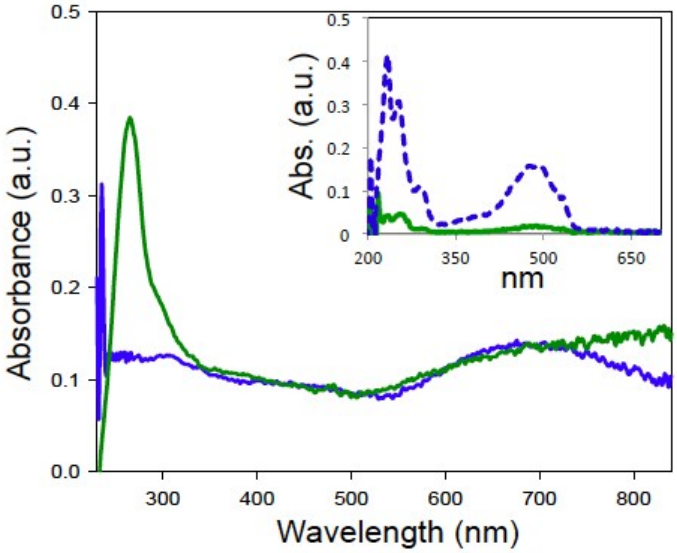

Fig. S4 UV-vis absorption spectra of the nanosheet solutions for the drug loading: GA-Au-Chi-PCLPEG nanosheets before adding Dox (green curve); after loaded with Dox and separated (blue curve); The Dox molecules in supernatant solution of the correspondant samples are quantitated, spectrometrically (inset).

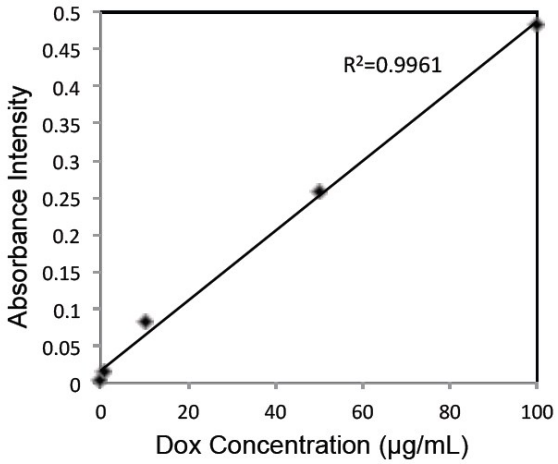

Fig. S5 Calibration curve based on UV-Vis analysis of Dox with different concentrations by the intensity of spectra at 490 nm

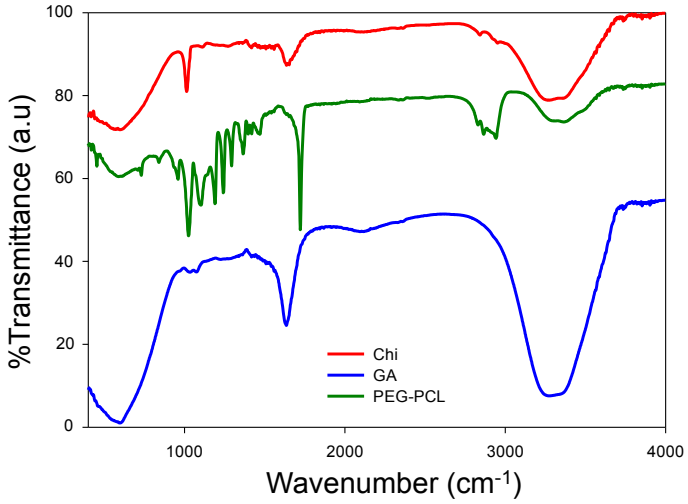

Fig. S6 FTIR spectra of chitosan, PEG-*b*-PCL copolymer, and gum arabic polymers.

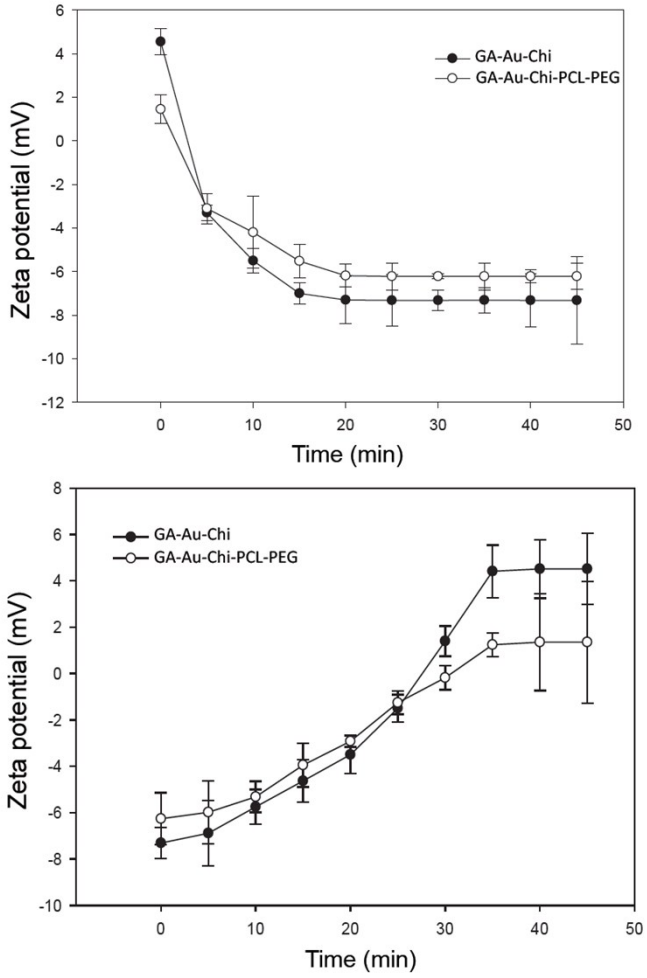

Fig. S7 Rolling (a) and unrolling (b) rate of JCN samples at pH 10 and pH 5, respectively, determined by zeta potential analysis as a function of time.

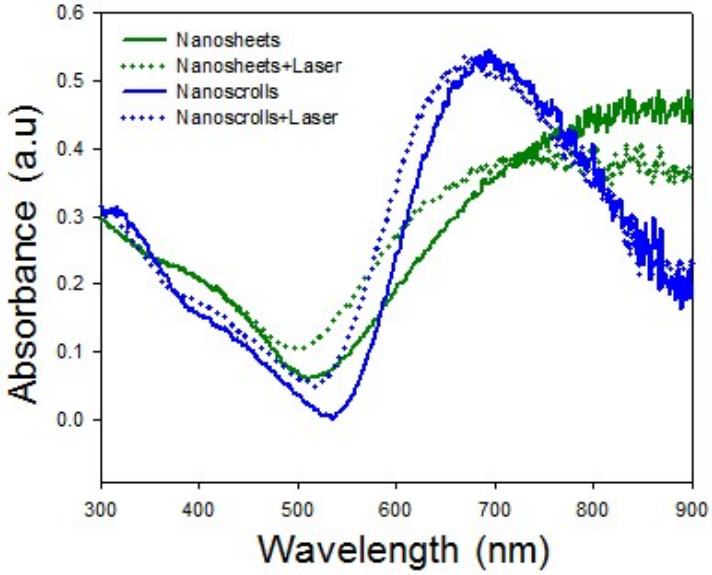

Fig. S8 UV-vis spectroscopic photothermal stability of Janus sheet and scroll solutions before and after 1 W NIR laser irradiation for 15 min.

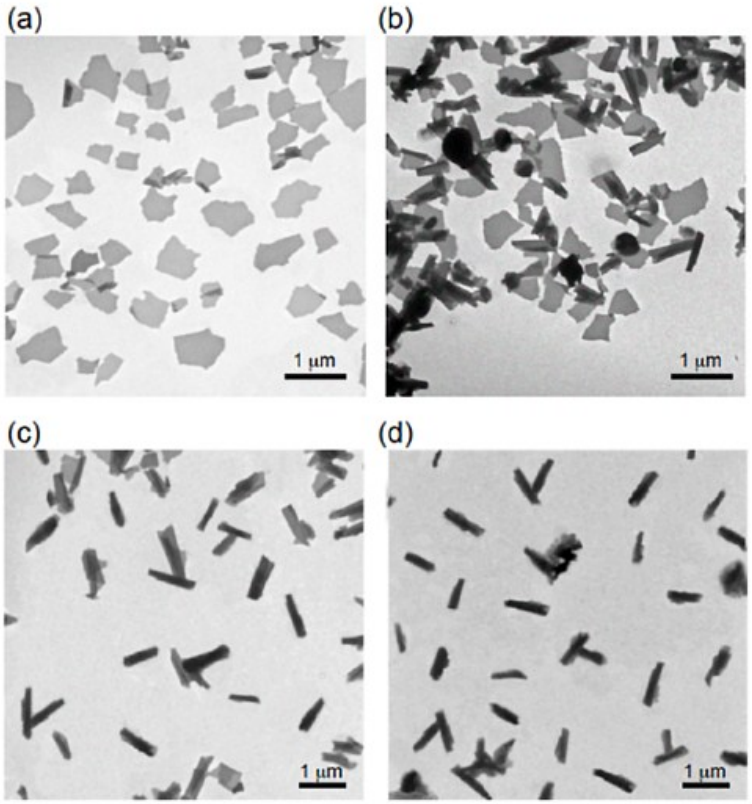

Fig. S9 TEM images of Janus sheet and scroll solutions before (a, c) and after (b, d) 1 W NIR laser irradiation for 15 min, correspondingly.

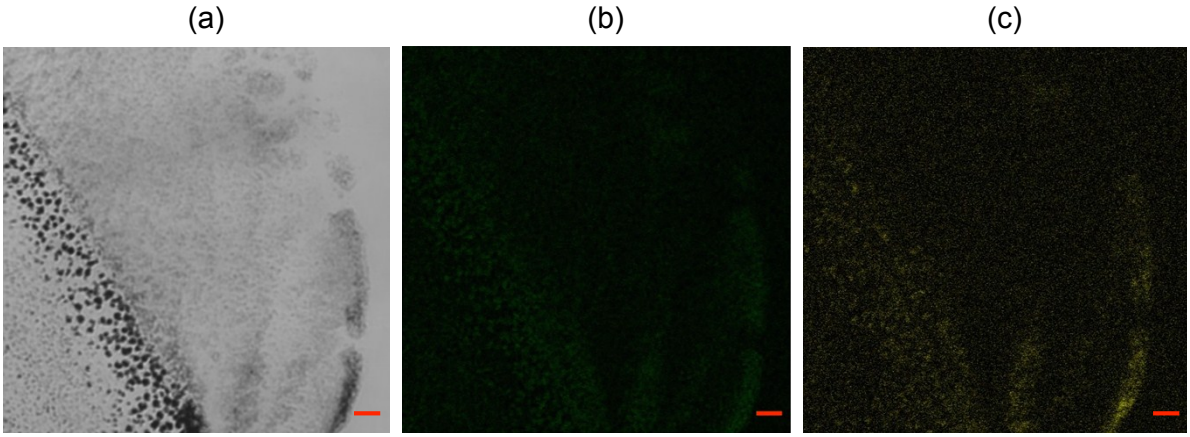

Fig. S10 Bright field (a), confocal (b), and two-photon (c) microscopic images of spherical gold nanoparticles (15 nm, sputtered for 15 min), showing no substantial fluorescence, while only aggregated particles are contributed to the dim brightness (Scale bar: 2 μm). Confocal and two-photon microscopy images were obtained with laser excitation at 488 and 800 nm, correspondingly.

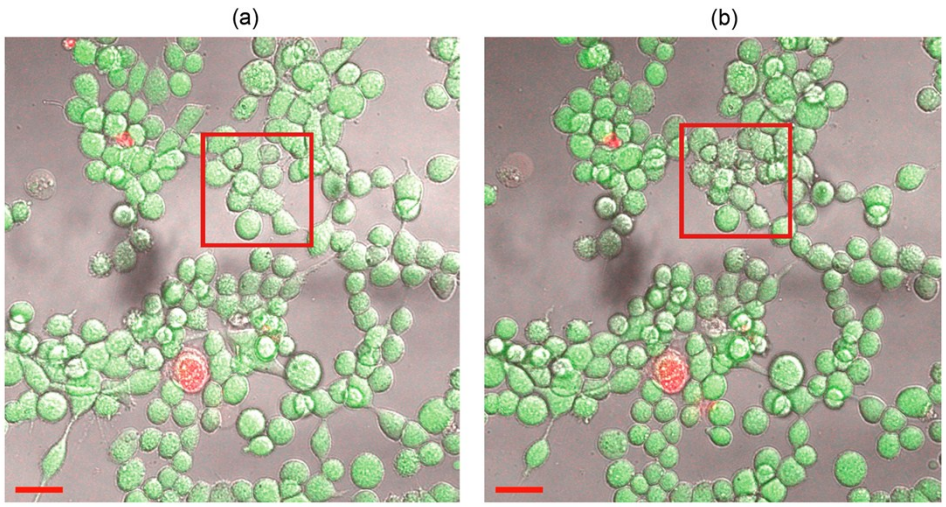

Fig. S11 Effects of the two-photon excitation on HeLa cells in the absence of JCNs. The calcein acetoxymethyl ester and ethidium homodimer-1 were used to label live and dead cells, respectively: (a) before therapy and (b) after 30 min irradiation at 0.1 mW. All the pictures are on a same scale. Scale bar: 20 μm.