## Supplementary

## Blocking CD47 with restructured peptide nanoparticles for motivating

## phagocytosis to inhibit tumor progression

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Fig. S1  $^1\!H$  NMR spectrum of mPEG-NH2 and PEG-Azo polymer.



Fig. S2 IR spectra of the mPEG-NH\_2, Azo and PEG-Azo.



Fig. S3 The HPLC and MS spectrum of PAP NPs.



Fig. S4 The structure and <sup>1</sup>H NMR spectrum of PAP polymer.



Fig. S5 The penetration of PAP NPs and self-assembled fiber networks on 3D tumor spheres in vitro. Confocal images showing the penetration of the PAP NPs loading DiD in tumor spheres after 12 hours under hypoxia and labeling the self-assembled fiber network with ThT. The control group was treated without preparation and only ThT staining was applied.





Fig. S6 The SEM of B16F10 spheres with an average diameter of about 500  $\mu$ m, were treated with PAP NPs (250  $\mu$ M) for 12 h under hypoxic condition. The tumor spheres were untreated with drugs as the control groups.



Fig. S7 Together with same preparation concentration but under different culture conditions for 12 h, *in vitro* cytotoxicity of PAP NPs against B16F10 cells was determined by the CCK-8 cell viability assay. Each value is represented as mean  $\pm$  SD (n =5).



Fig. S8 H&E staining of organs from different groups after treatment. The scale bar is 10  $\mu m.$