Electronic Supplementary Material

Artificial cell membrane camouflaged immunomagnetic nanoparticles for enhanced circulating tumor cells isolation

Xiaoxi Zhou, Yujia Zhang, Ke Kang, Nanhang Zhu, Jia Cheng, Qiangying Yi,* Yao Wu*

National Engineering Research Center for Biomaterials, Sichuan University, Chengdu 610064, PR China

E-mail: qyi@scu.edu.cn; wuyao@scu.edu.cn

Characterization of artificial cell membrane camouflaged magnetic nanoparticles (AMNPs).

Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) was used to analyze the protein components of AMNPs. About 2.5 mg AMNPs were loaded into a 12 % PAGE gel and run at 140 V for 1.5 h. The gel was stained with Coomassie blue for 6 h and decolorized for image. The HSA in supernatant can be determined by fluorescence spectrometry (excitation at 280 nm, emission at 332 nm). The mass of HSA adsorbed by AMNPs can be gained by subtracting HSA protein in the supernatant from the added HSA protein. The adsorption of DSPE-PEG-biotin on AMNPs can be determined by ICP-MS. Considering the influence of PBS, AMNPs were repeatedly washed with deionized water. And same amount of MNPs/GNs (incubated in PBS for the same time and washed with deionized water) were used as control. The content of lipid adsorbed by AMNPs is the difference between phosphorus in AMNPs and phosphorus in MNPs/GNs.

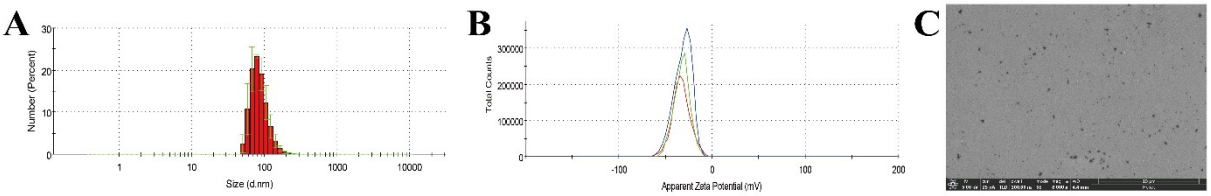

Fig. S1 A-C) The size distribution, zeta distribution as well as SEM figures of the graphene sheets (GNs).

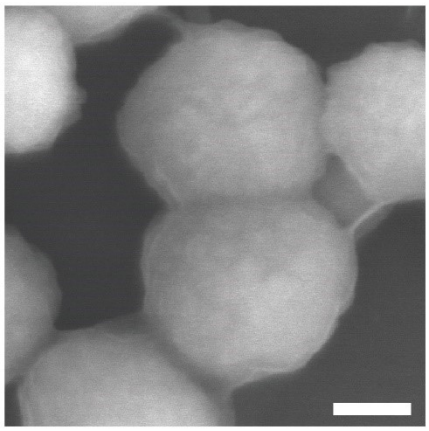

Fig. S2 SEM image for MNPs/GNs. Scale bar: 100 nm.

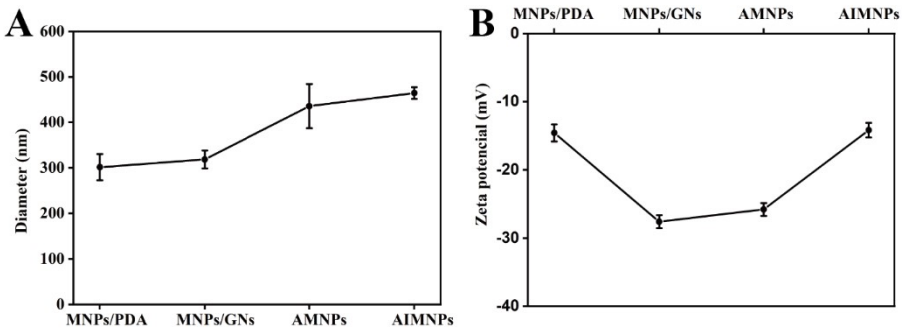

Fig. S3 A-B) hydrodynamic size and zeta potential change of the magnetic nanoparticles.

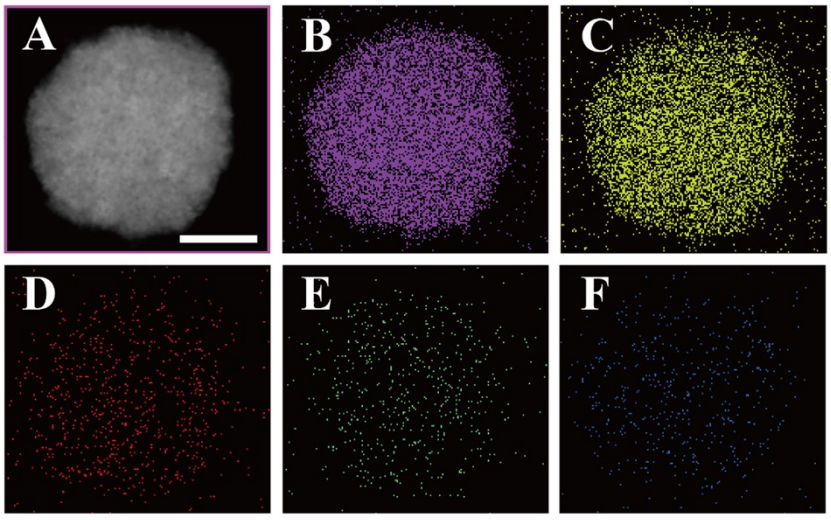

Fig. S4 TEM mapping of AMNPs. A) the selected area. B-F) the iron, oxygen, nitrogen, phosphorus and sulfur elements. Scale bar: 100 nm.

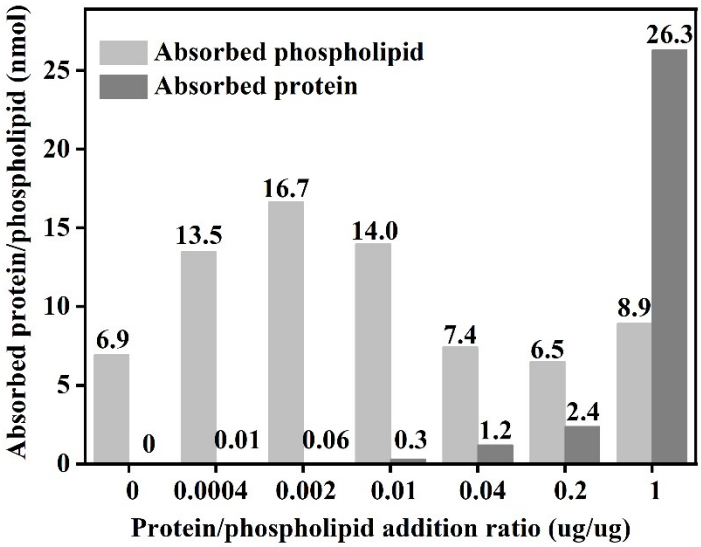

Fig. S5 The influence of protein/phospholipid addition ratio on the absorbed protein/phospholipid amount by AMNPs.

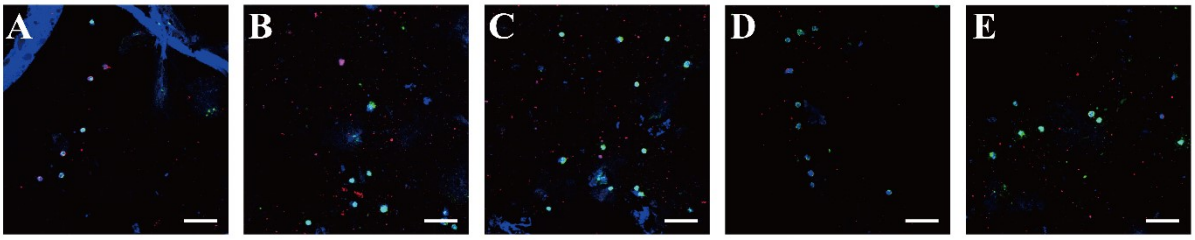

Fig. S6 Typical immunofluorescence staining image from five patient samples. Scale bar: 50 μm.

Table S1 Information of healthy volunteers and cancer patients.

Sample No.	Gender	Age	Healthy/Cancer Type
1	M	35	healthy
2	F	28	healthy
3	F	56	healthy
4	F	54	liver
5	M	73	liver
6	M	40	liver
7	M	71	liver
8	M	54	liver
9	M	61	liver