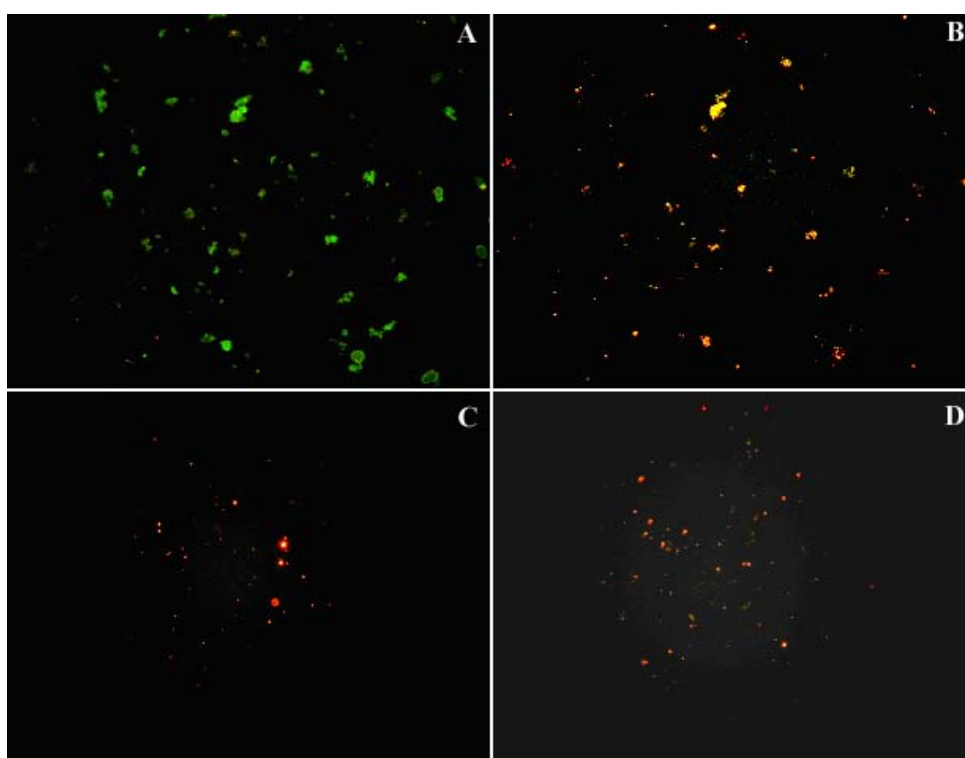


CHEM. COMMUN.

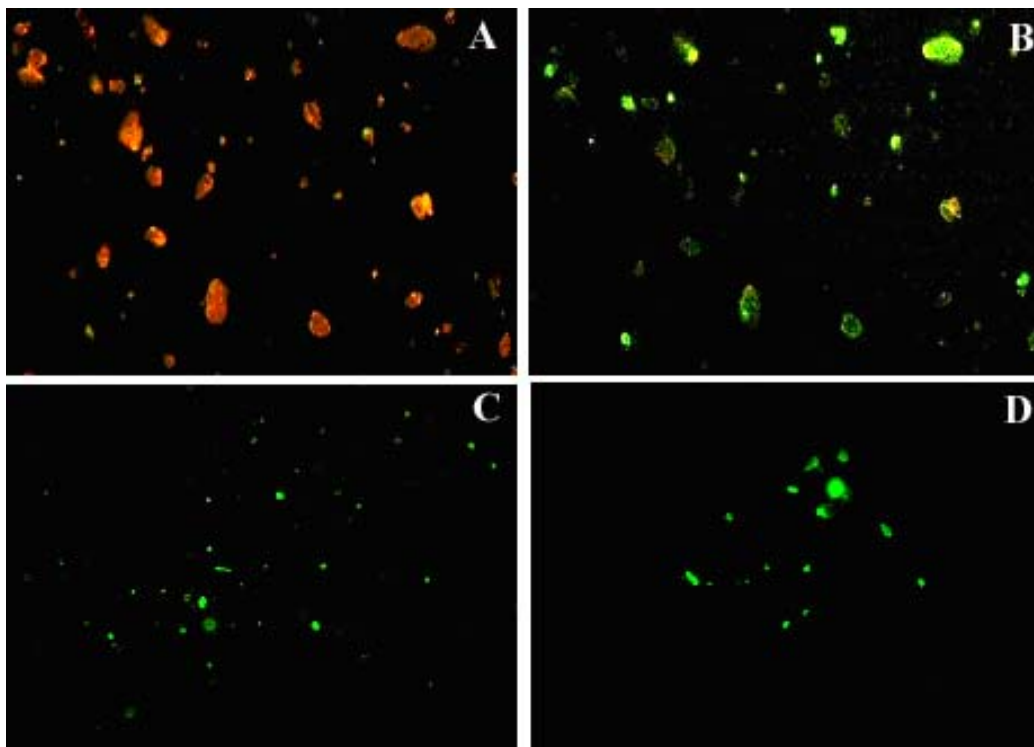
## Supplementary Information

### Biofunctionalization of fluorescent-magnetic-bifunctional nanospheres and their applications

Guo-Ping Wang, Er-Qun Song, Hai-Yan Xie, Zhi-Ling Zhang, Zhi-Quan Tian, Chao Zuo, Dai-Wen Pang,\* Dao-Cheng Wu, and Yun-Bo Shi



**Figure SI-1.** The trifunctional avidin-nanospheres bind to biotin-FITC. The trifunctional nanospheres were mixed with biotin-FITC. After washing off biotin-FITC, the nanospheres were irradiated for about 20 min with a Hg-lamp to excite the complex of trifunctional avidin-nanospheres-biotin-FITC (A). The strong green color indicates the binding of biotin-FITC. After FITC was photobleached, the complex returned to orange-red colour of the nanospheres themselves (B). Control experiments: No green fluorescence (from FITC) except the orange-red fluorescence of the nanospheres themselves was seen when the nanospheres were coupled with avidin without oxidation (thus no coupling of avidin to the nanosphere) (C) or when the bifunctional nanospheres were used in the binding reaction with biotin-FITC directly (D).



**Figure SI-2.** The trifunctional biotin-nanospheres bind to streptavidin-phycoerythrin. The trifunctional biotin-nanospheres were mixed with streptavidin-phycoerythrin. After washing off unbound streptavidin-phycoerythrin, the nanospheres were irradiated for about 40 min with a Hg-lamp to excite the complex. The orange-red fluorescence of the complex indicates the presence of streptavidin-phycoerythrin on the nanospheres, i.e., the binding of streptavidin-phycoerythrin to the surface biotin (A). After phycoerythrin was photobleached, the complex returned to the green color of the nanospheres themselves (B). Control experiments: No orange-red fluorescence (from phycoerythrin) except the green fluorescence of the nanospheres themselves was seen when the nanospheres were coupled with unmodified biotin (thus no coupling of biotin to the nanosphere) (C) or when the bifunctional nanospheres were used in the binding reaction with streptavidin-phycoerythrin directly (D).