Supplementary Information

Hemocompatibility Investigation and Improvement of Near-Infrared persistent luminescence nanoparticle $ZnGa_2O_4:Cr^{3+}$ by Surface PEGylation

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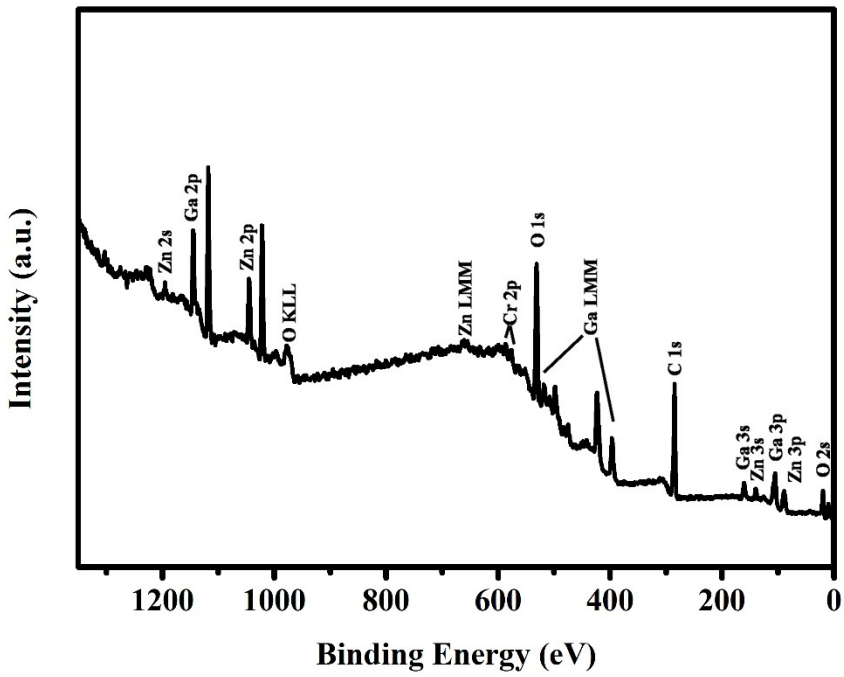

Fig. S1. XPS spectra of $ZnGa_2O_4:Cr^{3+}$

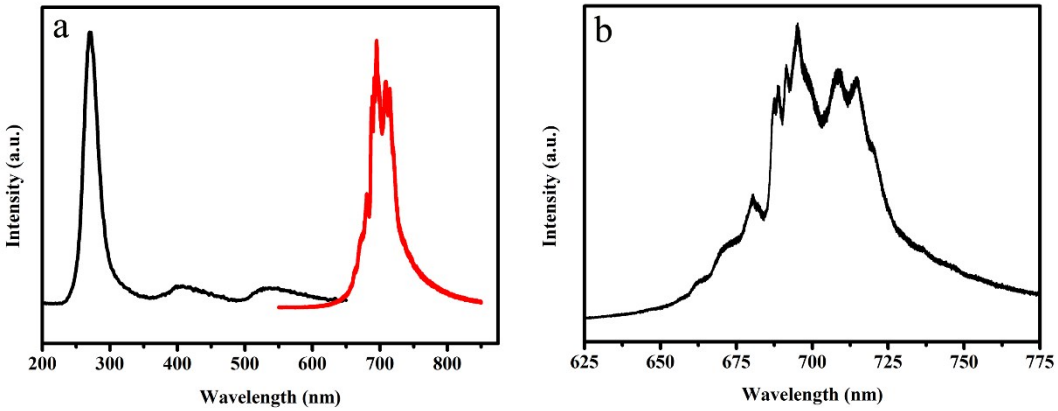

Fig. S2. PL excitation and emission spectraof ZGC nanoparticles. (a) excitation spectrum (black line) and emission spectrum (red line); (b)emission spectrum recorded by Raman spectroscopy.

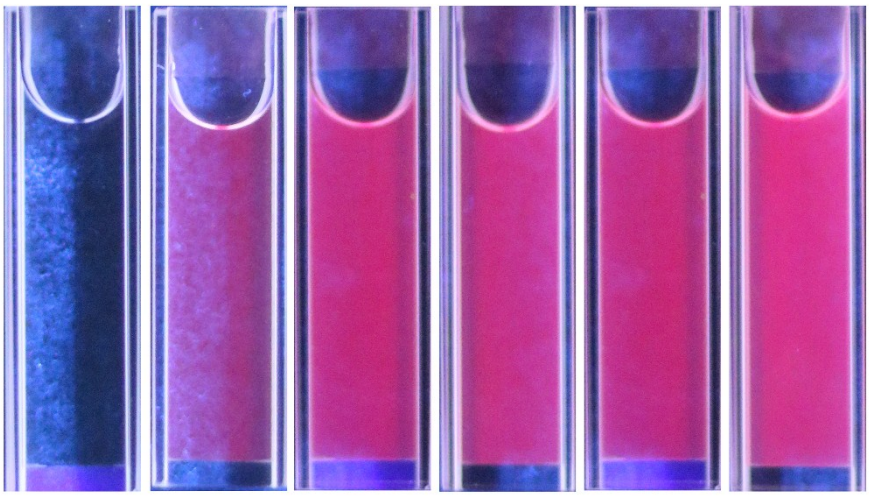

Fig. S3. Photoluminescence images of ZGC at 0, 0.4, 0.8, 1.2, 1.6, 2.0 mg mL^{-1} under 254nm UV illumination.

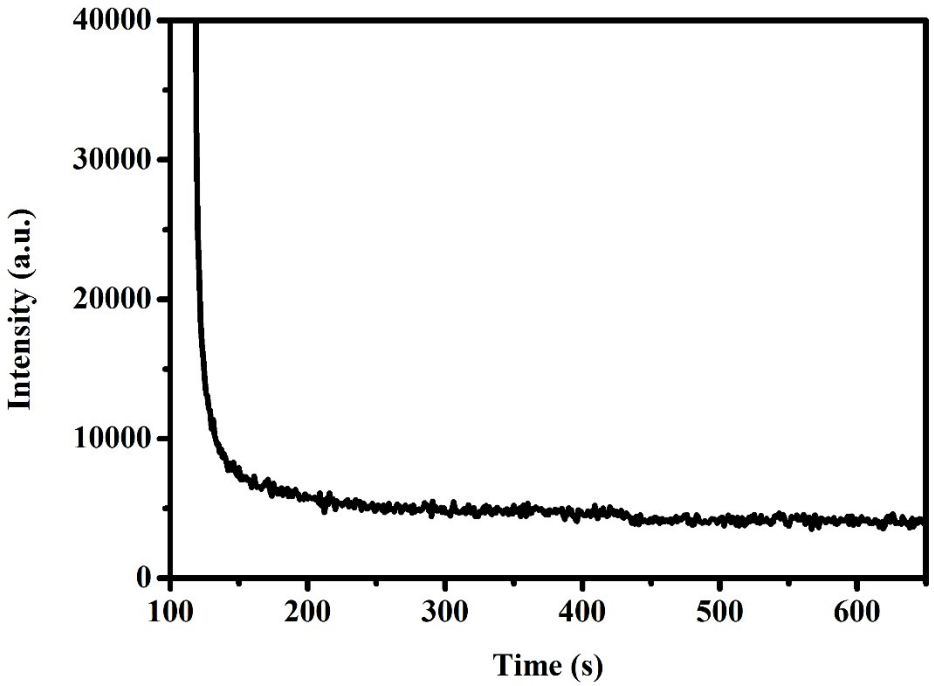

Fig. S4. Persistent luminescence decay spectrum of ZGC at room temperature.

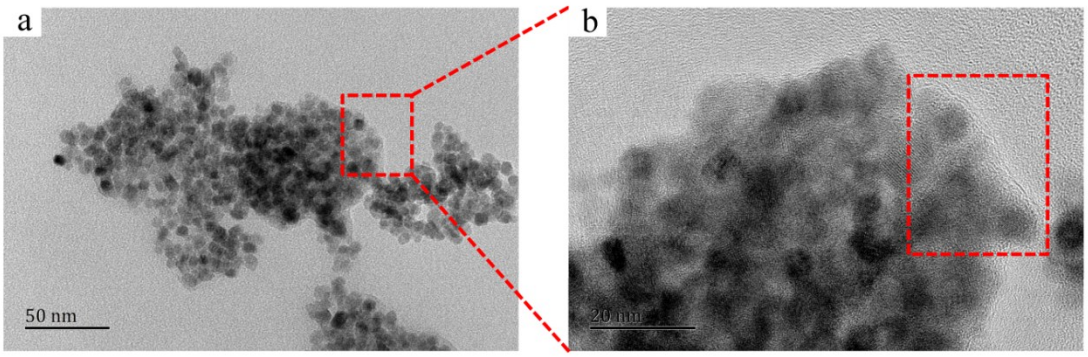

Fig. S5.TEM images (a-b) with different magnifications of ZGC-PEG.

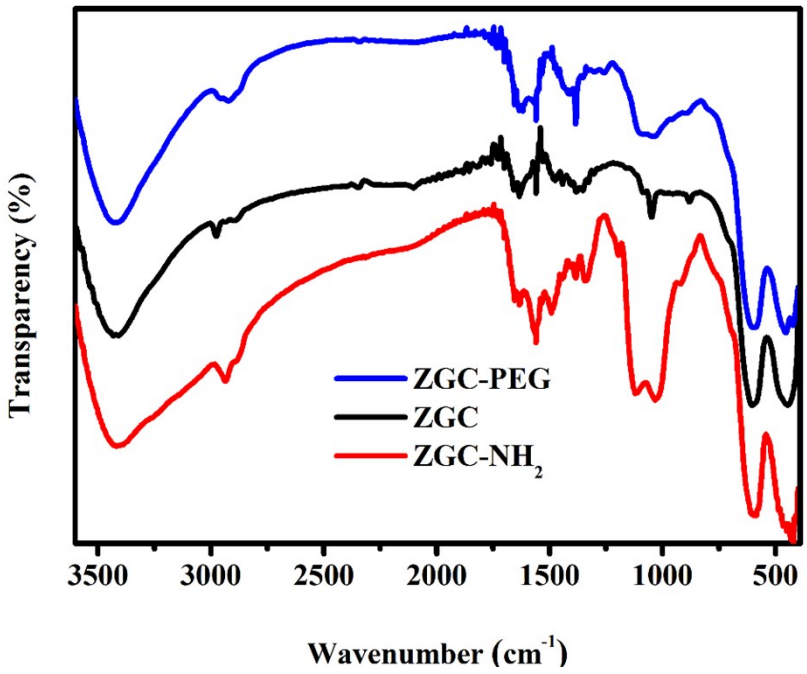

Fig. S6. FTIR spectra of ZGC, ZGC-NH_2, ZGC-PEG. The absorption peak at ~585 cm^{-1} and 450 cm^{-1} represent the characteristic of Zn-O and Ga-O vibration, respectively. The peaks at 1033 cm^{-1}(C-O-C, stretching), 1120 cm^{-1} (Si-O, stretching), 1351 cm^{-1} (C-H, bending), 1475 cm^{-1}, 1560 cm^{-1} and 1633 cm^{-1} (N-H, bending), 2869 cm^{-1} and 2975 cm^{-1} (C-H, stretching), strong band at ~3432 cm^{-1} (N-H, stretching) represent the characteristics of ZGC-NH_2. The peaks at 1041 cm^{-1} (C-O-C, stretching), 1081 cm^{-1} (Si-O, stretching), 1384 cm^{-1} (C-H, bending), 1535 cm^{-1} (N-H, bending), 1641 cm^{-1} (C=O, stretching), 2921 cm^{-1} (C-H, stretching) represent the characteristics of ZGC-PEG.

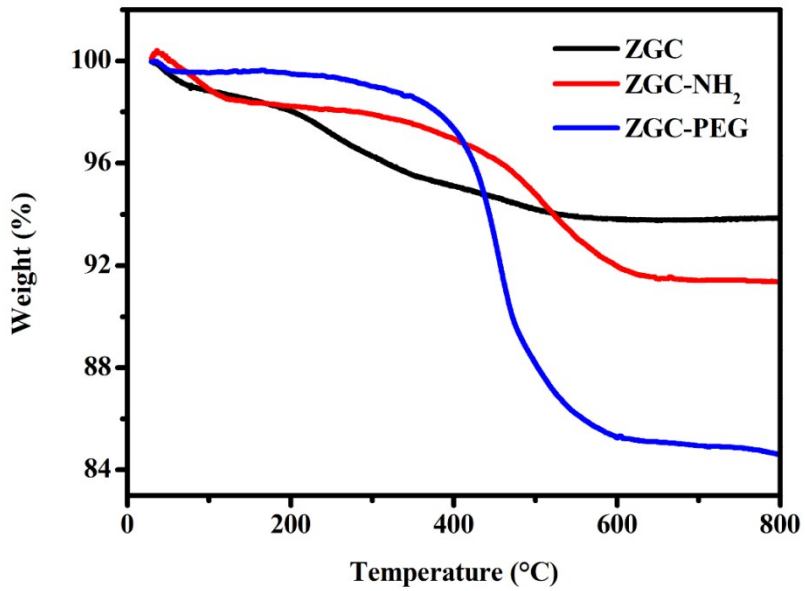

Fig. S7. Weight loss curves for ZGC-OH, ZGC-NH_2, ZGC-PEG

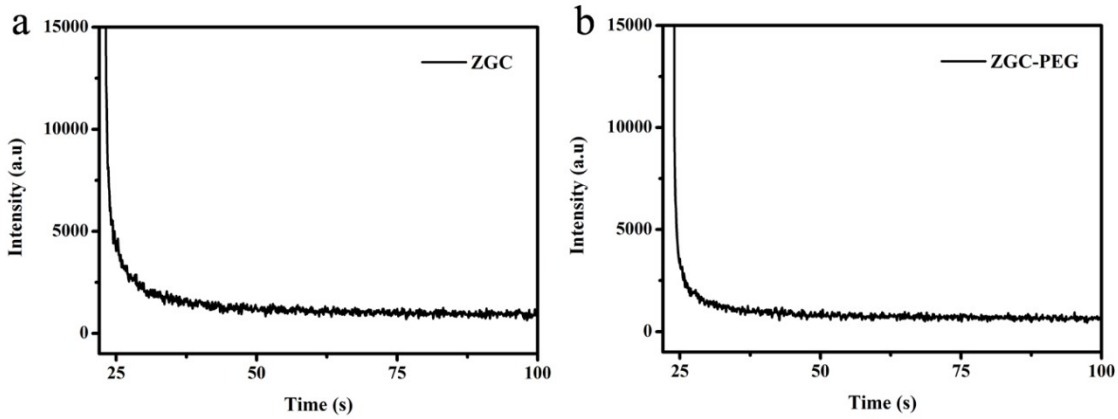

Fig. S8. Persistent luminescence decay curve of ZGC-OH and ZGC-PEG at room temperature.

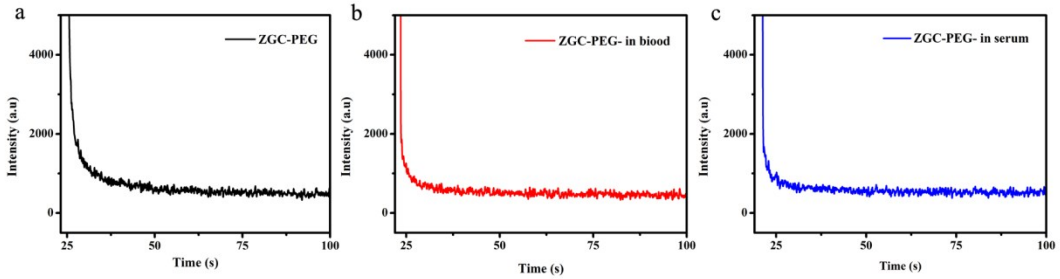

Fig. S9. Persistent luminescence decay curves of ZGC-PEGwith the concentrationat 1.5mg mL^{-1}in normal saline (a), blood (b) and serum (c) at room temperature, respectively.

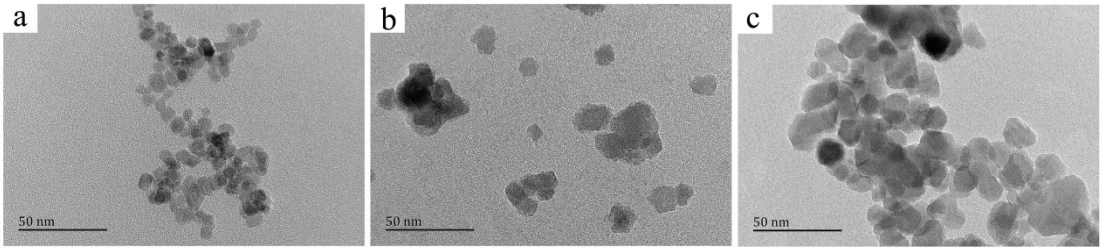

Fig. S10.TEM images of ZGC-OH with different sizes. (a) Sample 1, S1; (b) Sample 2, S2; (c) Sample 3, S3

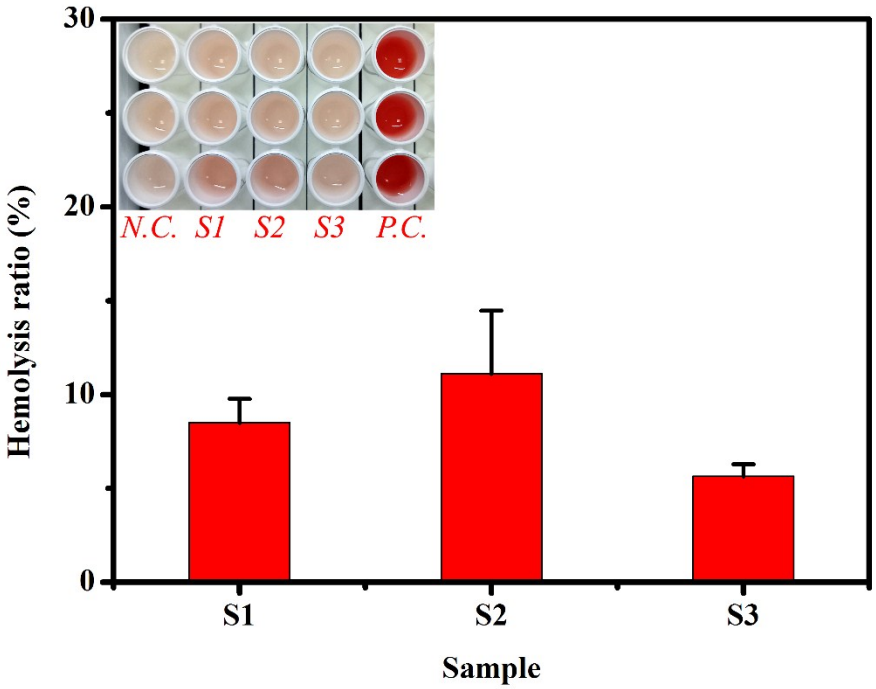

Fig. S11. Hemolysis rate induced by ZGC-OH at 0.5mg mL^{-1} of ZGC-OH with different sizes. Inset: photograph of ZGC-OH induced hemolysis. The leftmost test is normal saline (negative control); the rightmost test is distilled water (positive control). S1, S2, and S3 represent Sample 1, Sample 2, and Sample 3, respectively.