Supporting Information

Interfacial Assembly of Metal–Phenolic Networks for Hair Dyeing

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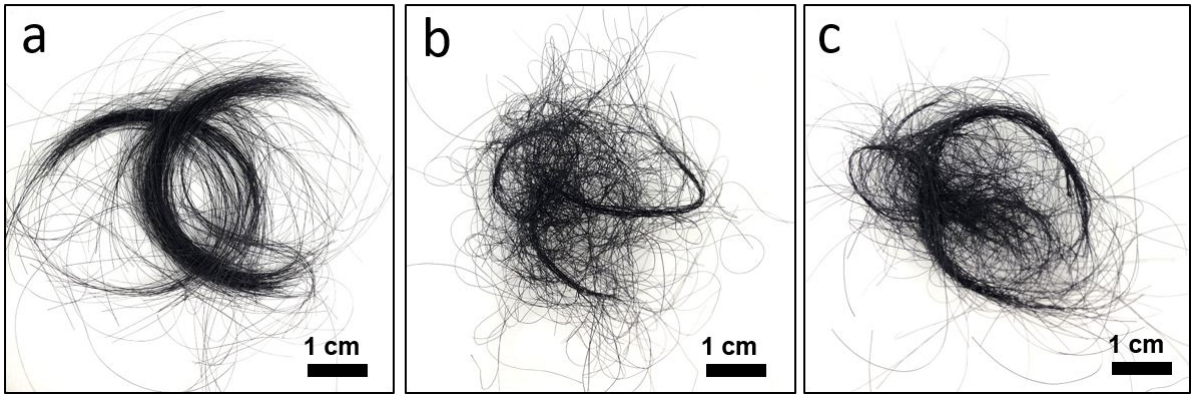

Figure S1. Photographs of tannic acid (TA)-Fe(II)-coated commercial gray hair samples subjected to a number of washes: (a) 0, (b) 25, and (c) 50.

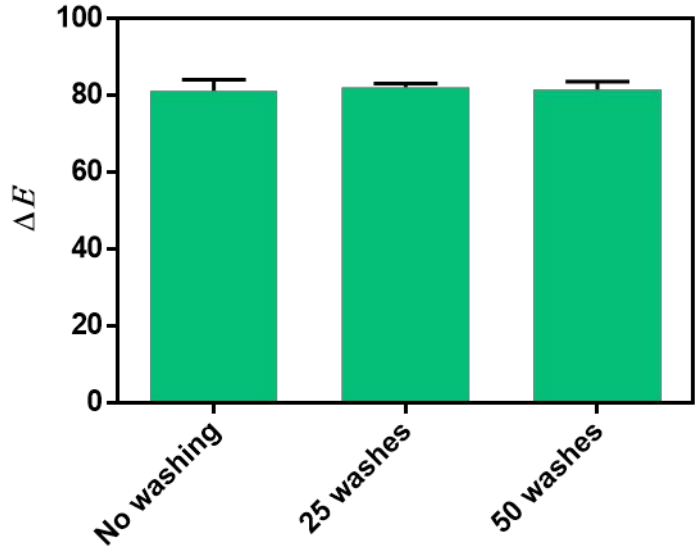

Figure S2. The color difference (ΔE) values of TA-Fe(II)-coated commercial gray hair samples subjected to a number of washes.

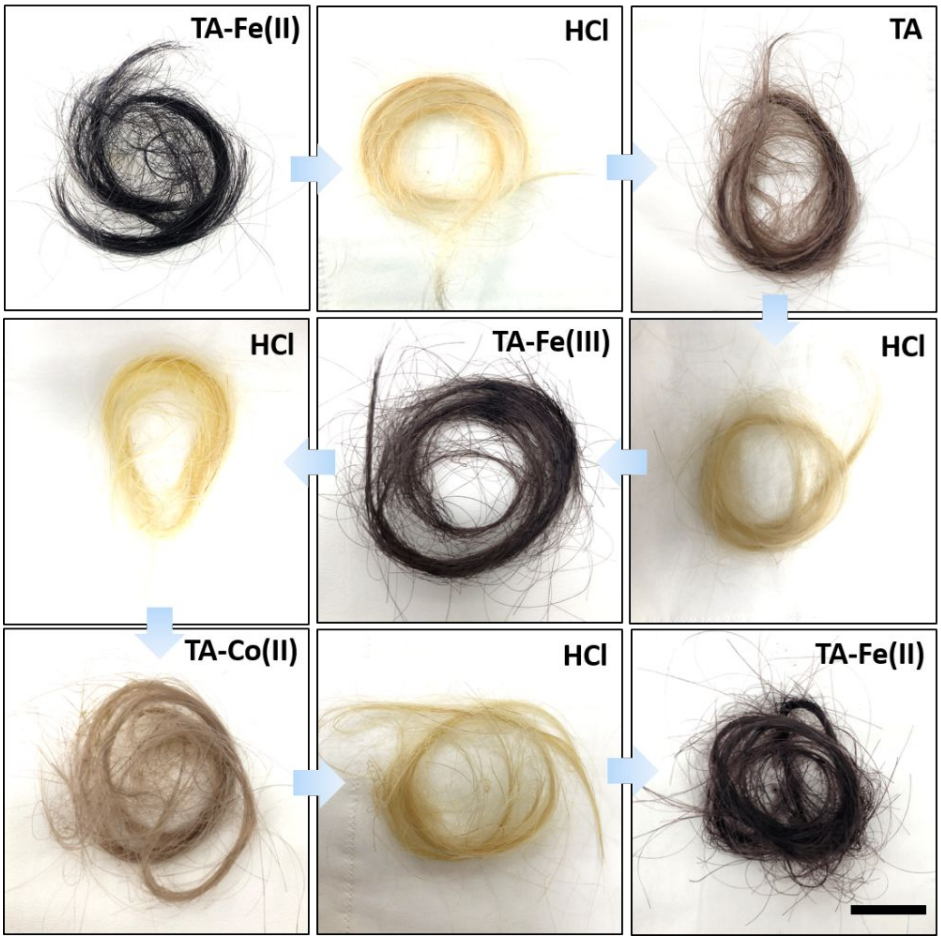

Figure S3. Photographs of commercial gray hair samples subjected to sequential dyeing/discoloration processes (scale bar = 1 cm). Discoloration was achieved with HCl.

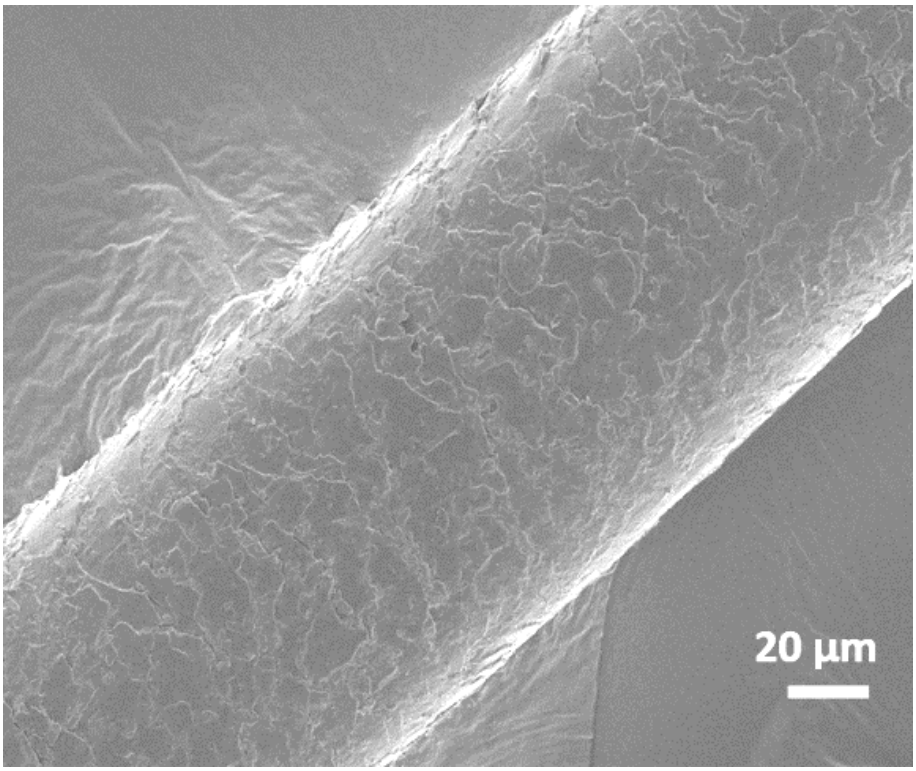

Figure S4. Scanning electron microscopy (SEM) image of a TA-coated commercial gray hair fiber.

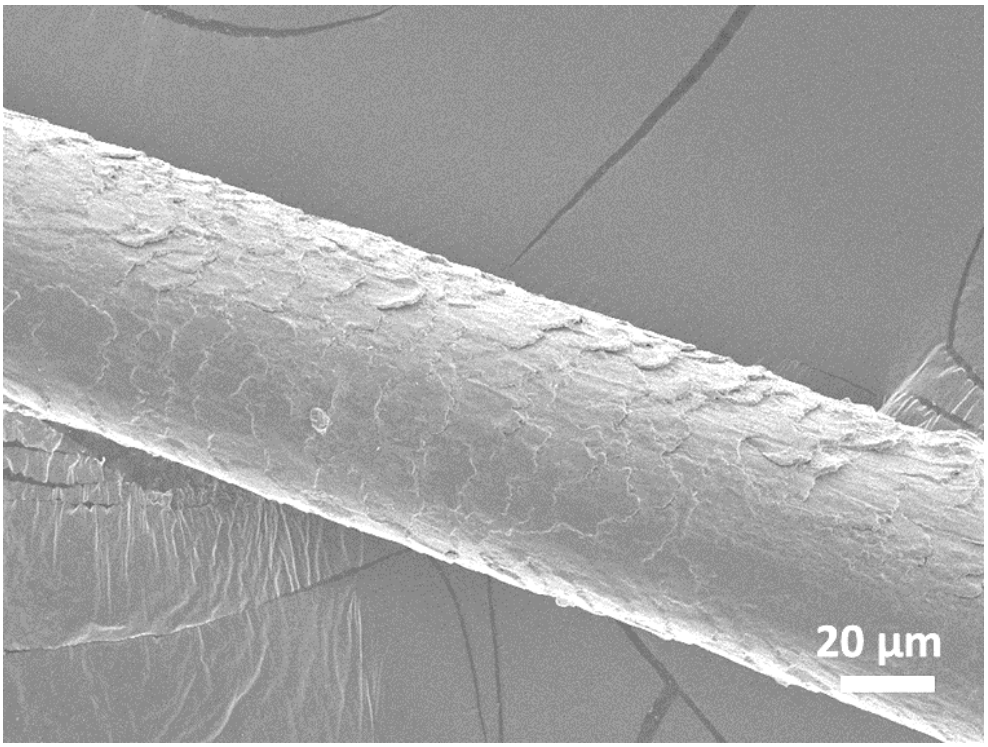

Figure S5. SEM image of a TA-Fe(II)-coated commercial gray hair fiber after 50 shampoo washes.

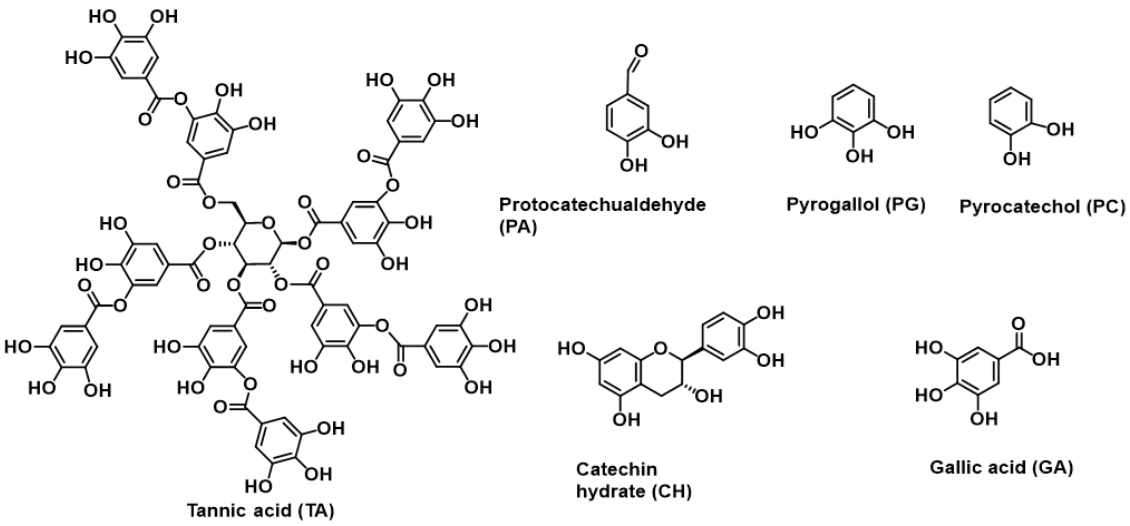

Figure S6. Structures of the different polyphenols examined in this study.

Figure S7. Photographs of human natural (non-commercial) gray hair subjected to repeated coating (dyeing) with GA-Fe(II).

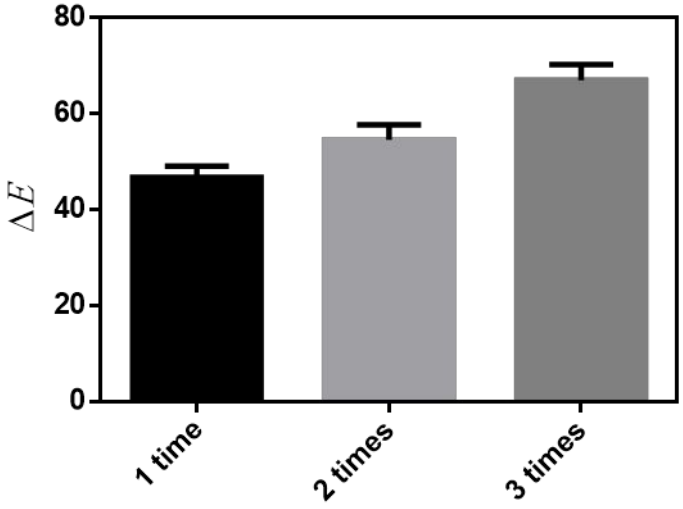

Figure S8. Δ*E* of human natural gray hair subjected to repeated coating with GA-Fe(II).

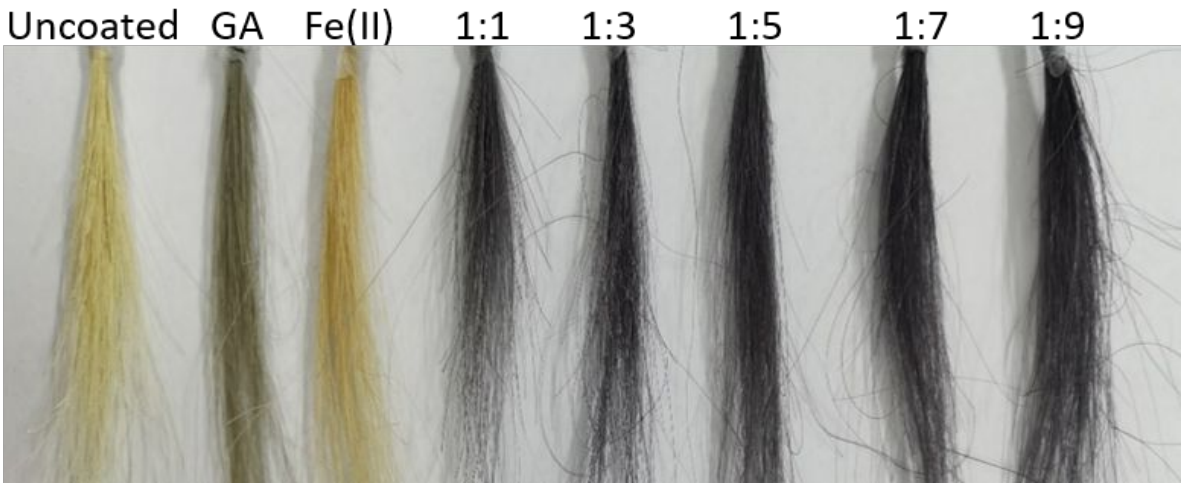

Figure S9. Photograph of human natural gray hair samples coated with GA-Fe(II) at different precursor (ligand-to-metal) molar ratios. The concentration of GA was fixed at 5 mg mL^{-1}.

Figure S10. Photograph of human natural gray hair samples coated with GA-Fe(II) and at different pH (GA-to-Fe molar ratio was 1:5).

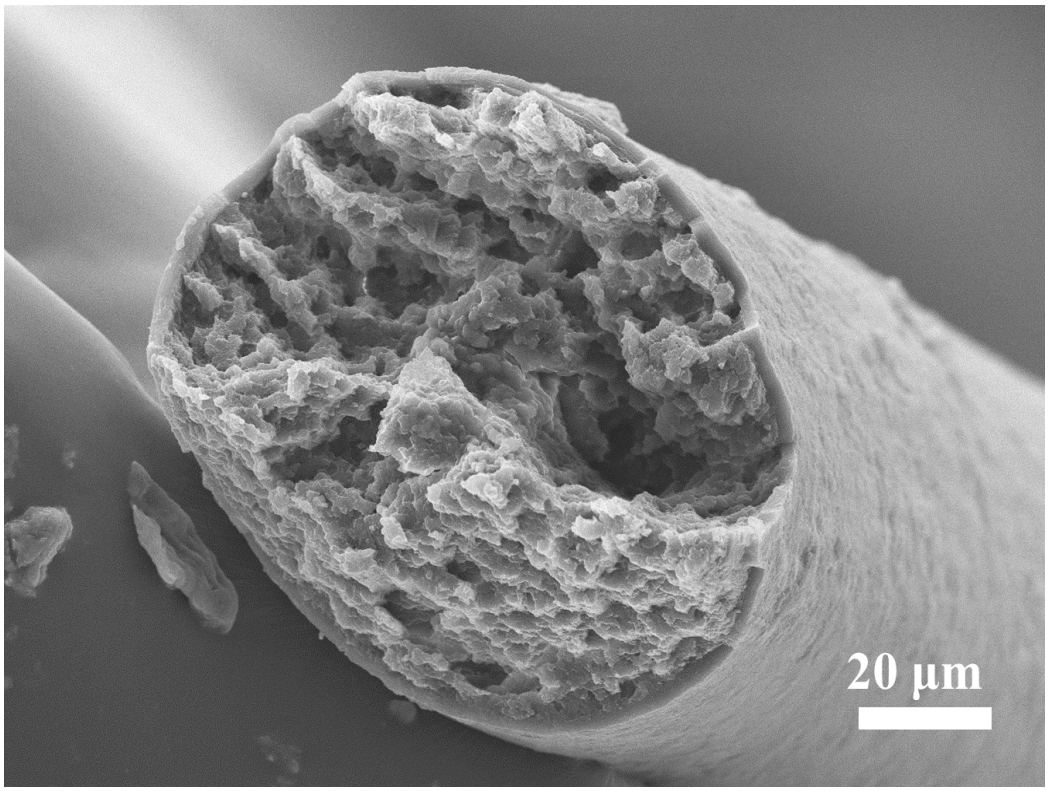

Figure S11. SEM image of the cross-section of a human natural gray hair fiber coated with GA-Fe(II).

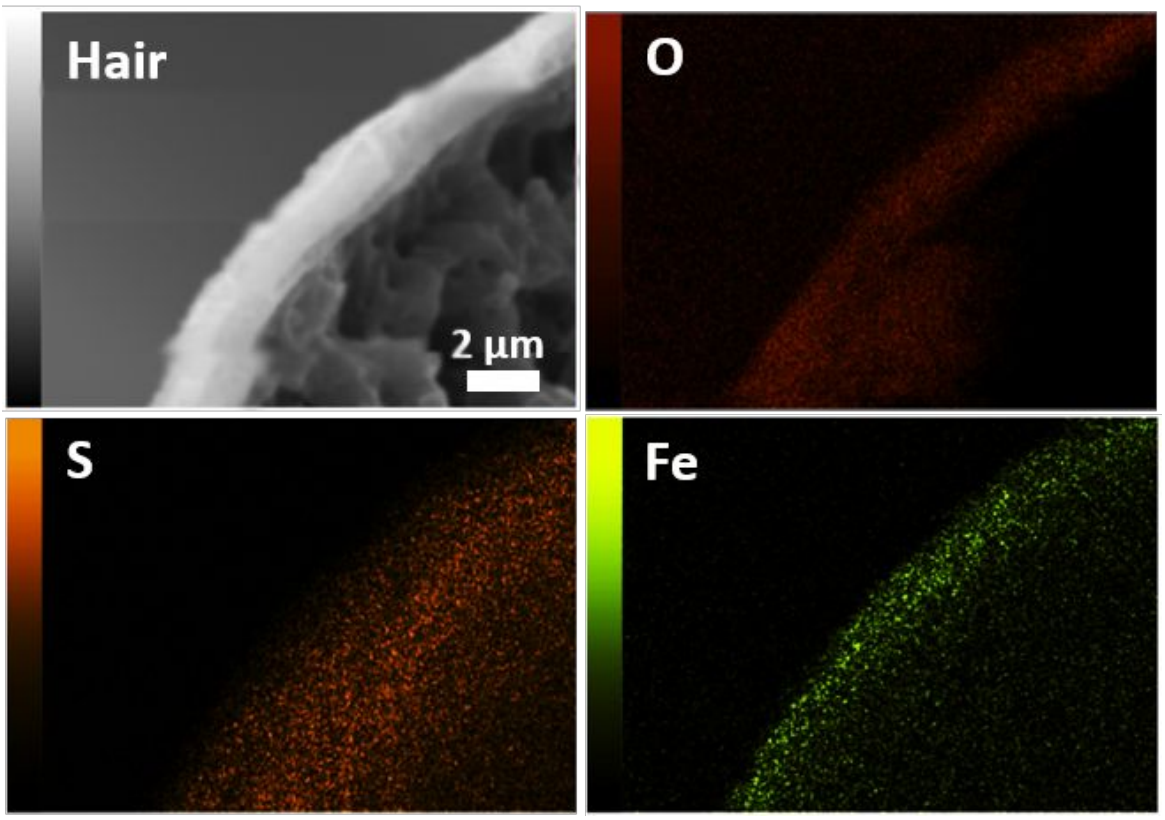

Figure S12. Energy-dispersive X-ray spectroscopy (EDS) mapping images of the cross-section of a human natural hair fiber coated with GA-Fe(II), showing the presence of elements O, S, and Fe.

Figure S13. Photograph of GA-Fe(II)-coated human natural gray hair samples subjected to a number of shampoo washes at room temperature.

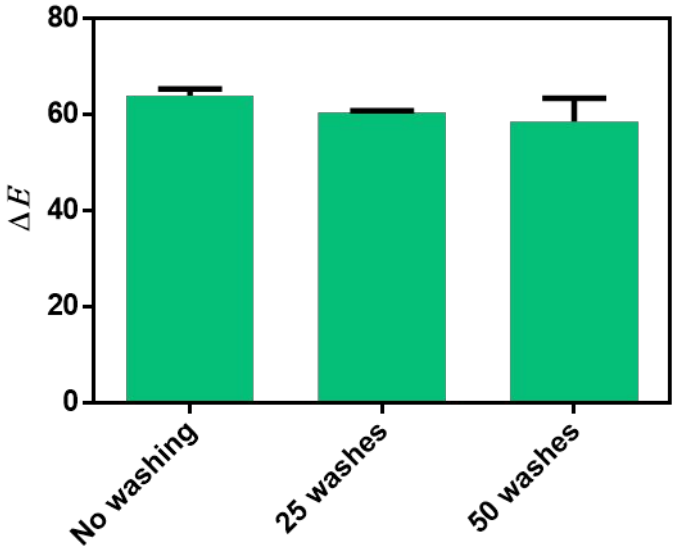

Figure S14. Δ*E* of human natural gray hair samples coated with GA-Fe(II) and subjected to a number of shampoo washes at 25 °C.

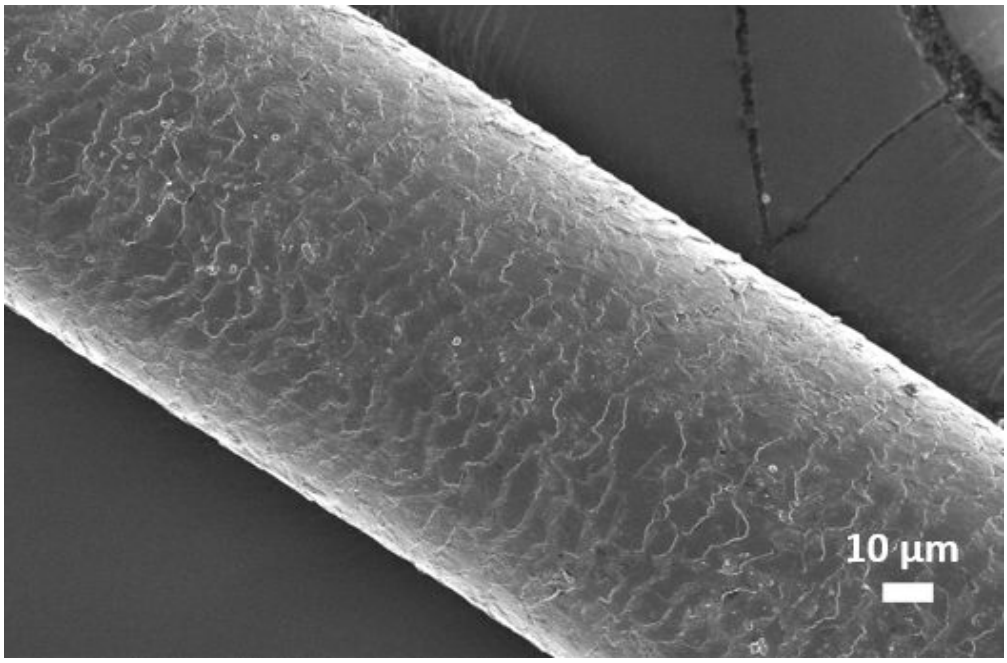

Figure S15. SEM image of a GA-Fe(II)-coated human natural gray hair fiber after 50 washes with shampoo at 25 °C.

Figure S16. Photographs of GA-Fe(II)-coated human natural gray hair subjected to 50 shampoo washes at 45 °C.

Figure S17. Photographs of GA-Fe(II)-coated human natural gray hair before and after treatment with boiling water for 1 h.

Figure S18. Photographs of GA-Fe(II)-coated human natural gray hair before and after sunlight exposure for 7 days.

Figure S19. Photograph of GA-Fe(II)-coated human natural gray hair samples after immersion in different pH solutions for 12 h.

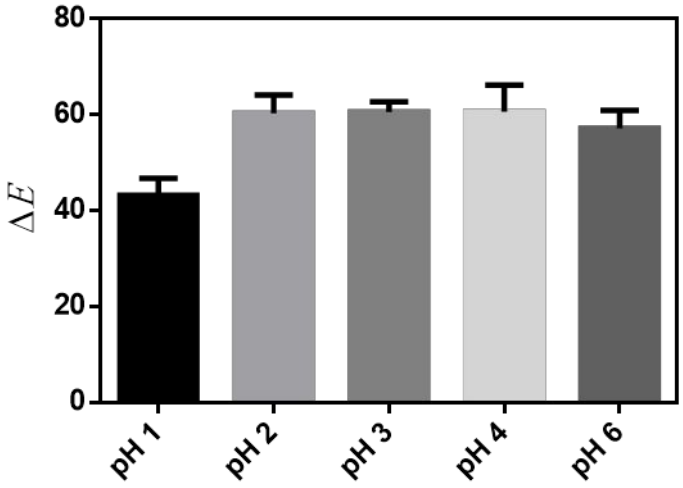

Figure S20. Δ*E* of GA-Fe(II)-coated human natural gray hair samples after immersion in different pH solutions for 12 h.

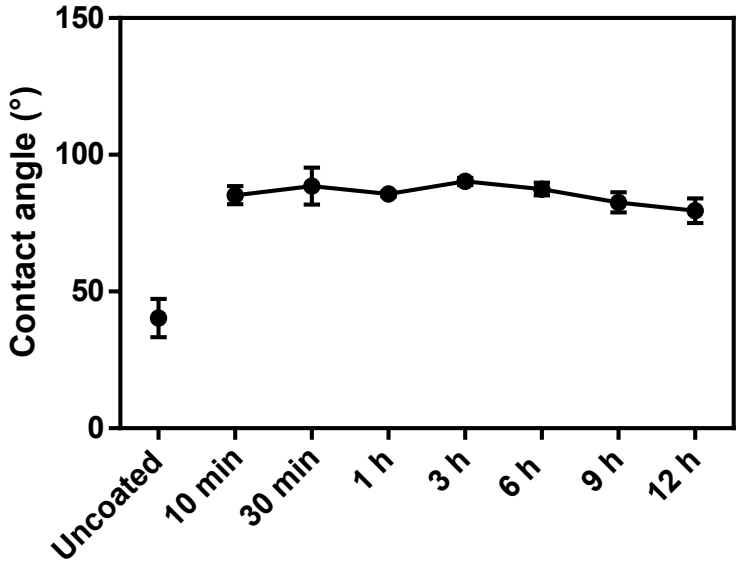

Figure S21. Water contact angles of quartz substrates before (uncoated) and after coating with GA-Fe(II) subjected to coating time.

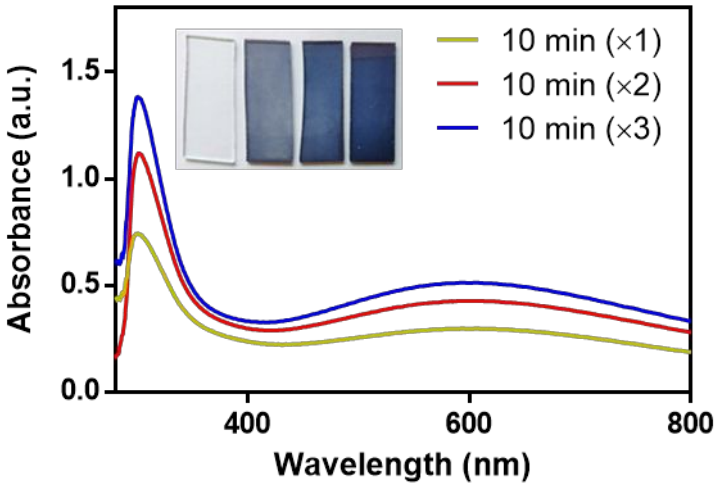

Figure S22. UV–vis absorbance spectra of quartz substrates with GA-Fe(II) coatings subjected to a number of coatings.

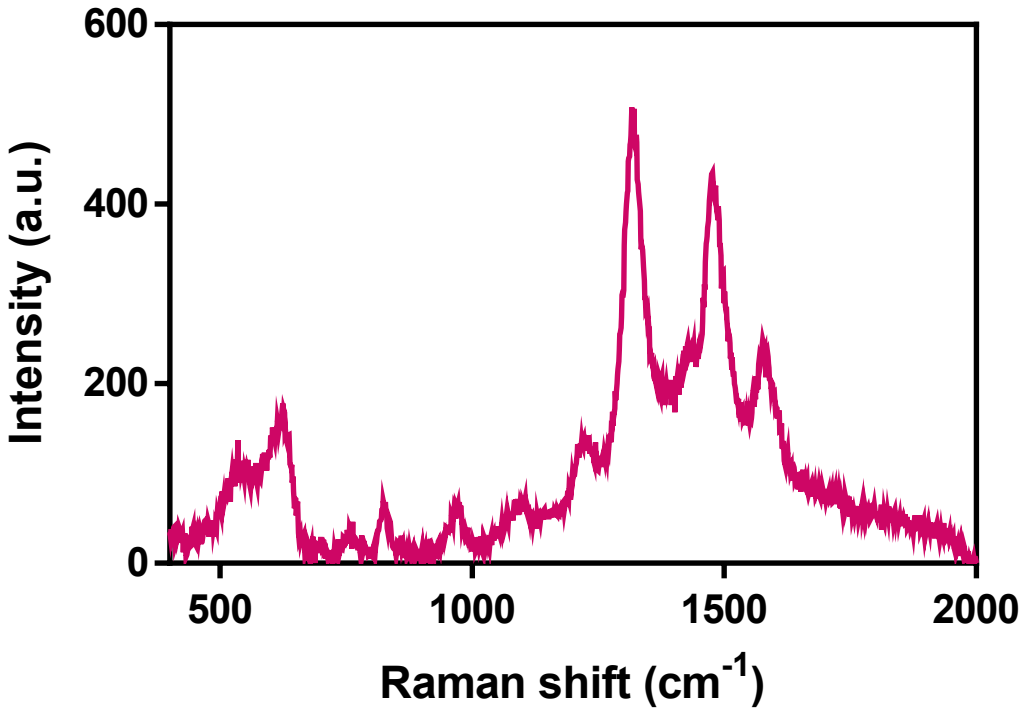

Figure S23. Resonance Raman spectrum of the surface of the GA-Fe(II) interfacial film.

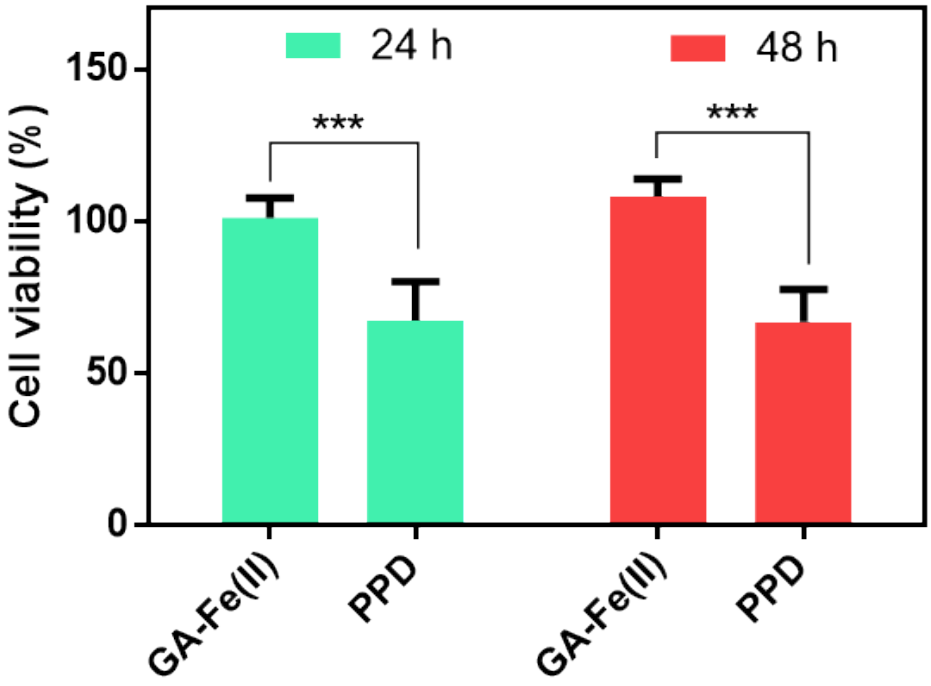

Figure S24. Cell cytotoxicity evaluations of GA-Fe(II)-treated hair extracts and *p*-phenylenediamine (PPD)-treated hair extracts against mouse embryonic fibroblast cells (NIH-3T3) after incubation for 24 and 48 h (***$P < 0.0001$).

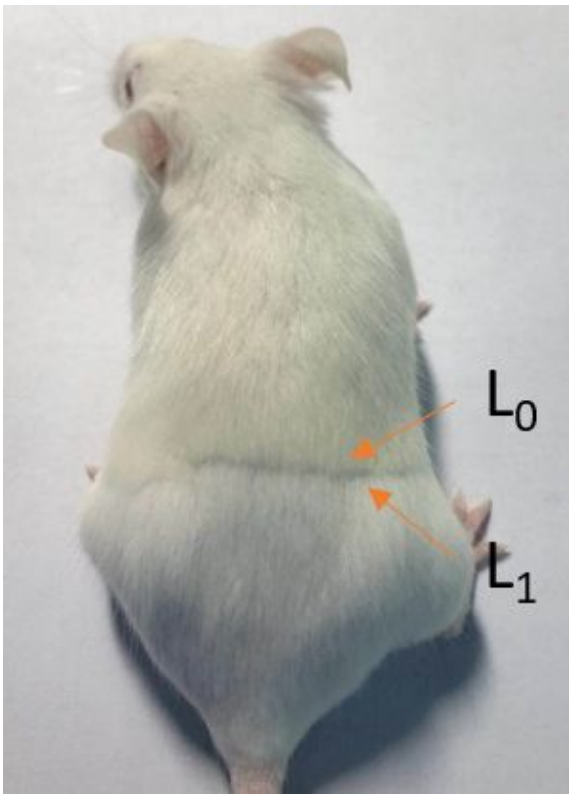

Figure S25. Photograph of a mouse model depicting L_1 and L_0.

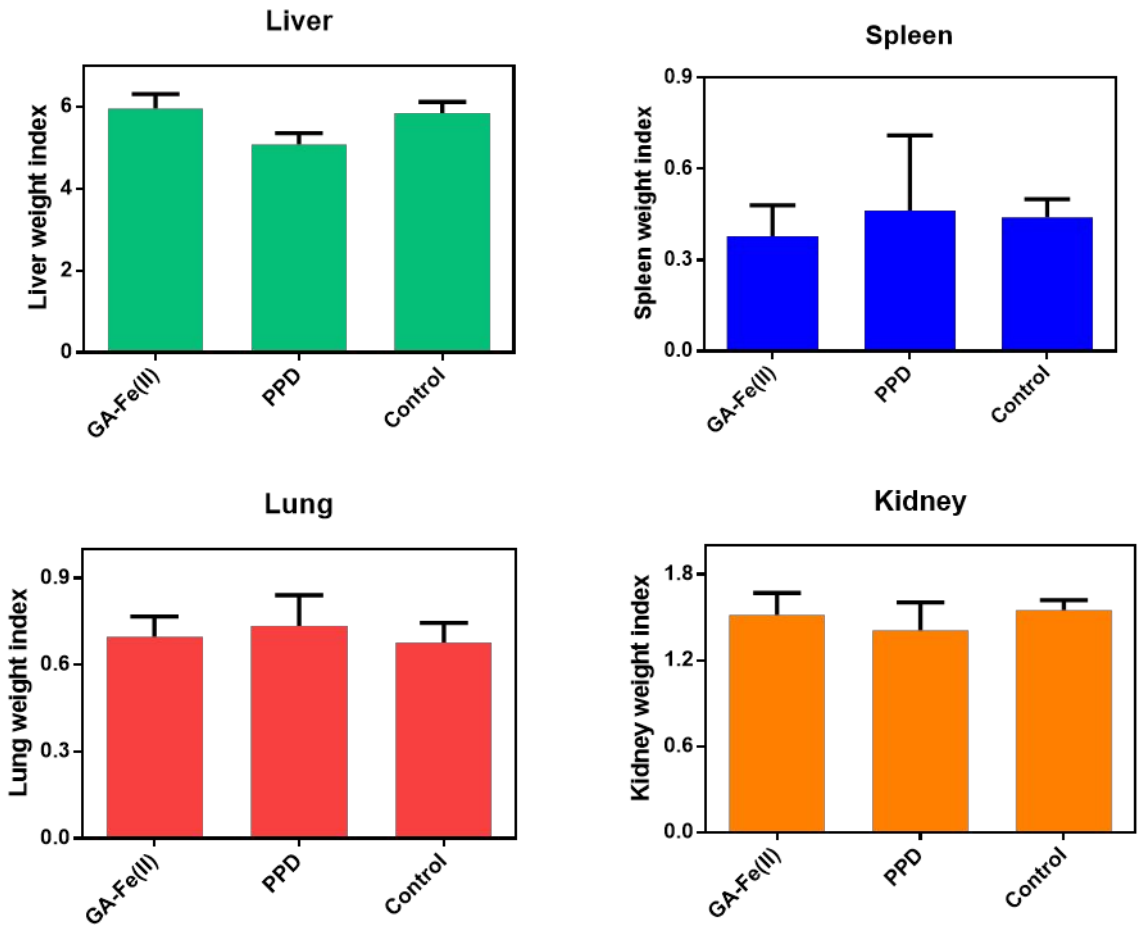

Figure S26. Effect of GA-Fe(II) and PPD treatment on the viscera index of spleen, lung, liver, and kidney on mice.