



Carbon dots derived from Maillard reaction for pH sensors and Cr (VI) Detection

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Figure S1: The general scheme of the Maillard reaction adapted from Hodge[1].

Figure S2: The three-dimensional spectrum of MR-CDs.

Figure S3: (a) The high-resolution spectrum of C1s. (b) The high-resolution spectrum of O1s.

Figure S4: Fitting curve of the Henderson-Hasselbalch equation ($R^2 = 0.99$).

Figure S5: Zeta potentials of MR-CDs in buffer solutions of different pH value.

Figure S6: (a) Fluorescence emission spectra of MR-CDs with Fe^{3+} , Cr^{6+} and F^- ions (the concentration of Fe^{3+} , Cr^{6+} and F^- were 100 μM , 100 μM and 1 μM , respectively). (b) Fluorescence quenching efficiency of various ions. (0: MR-CDs, 1: MR-CDs+ Fe^{3+} , 2: MR-CDs+ Cr^{6+} , 3: MR-CDs+ Fe^{3+} + Cr^{6+} , 4: MR-CDs+ Fe^{3+} + F^- , 5: MR-CDs+ Fe^{3+} + Cr^{6+} + F^-)

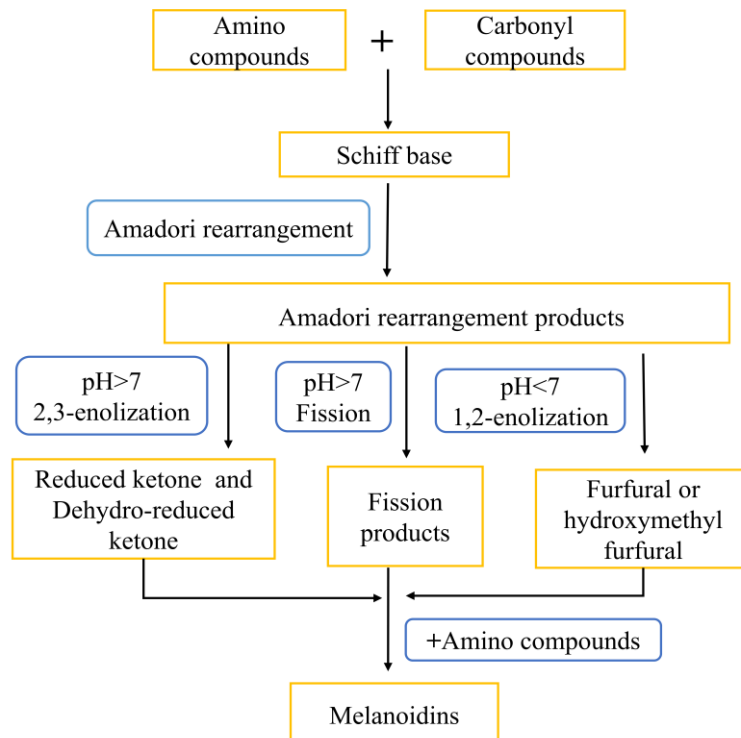


Figure S1. The general scheme of the Maillard reaction adapted from Hodge[1].

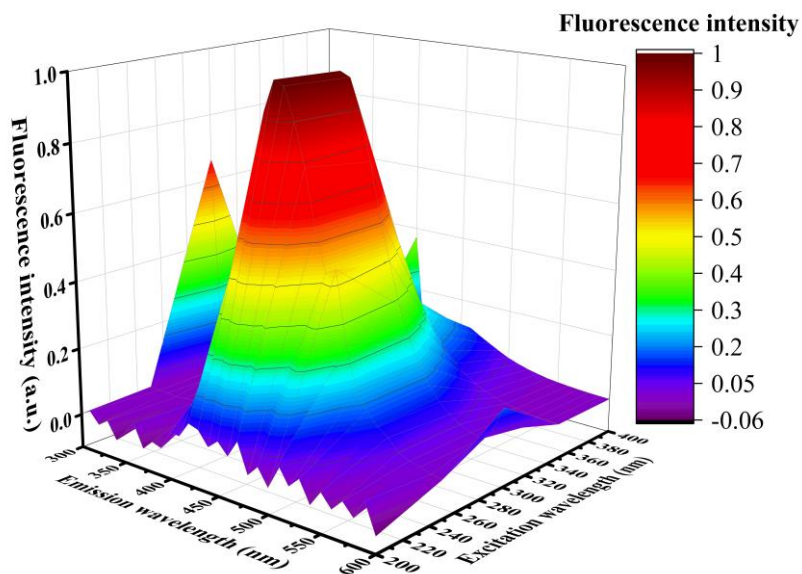


Figure S2. The three-dimensional spectrum of MR-CDs.

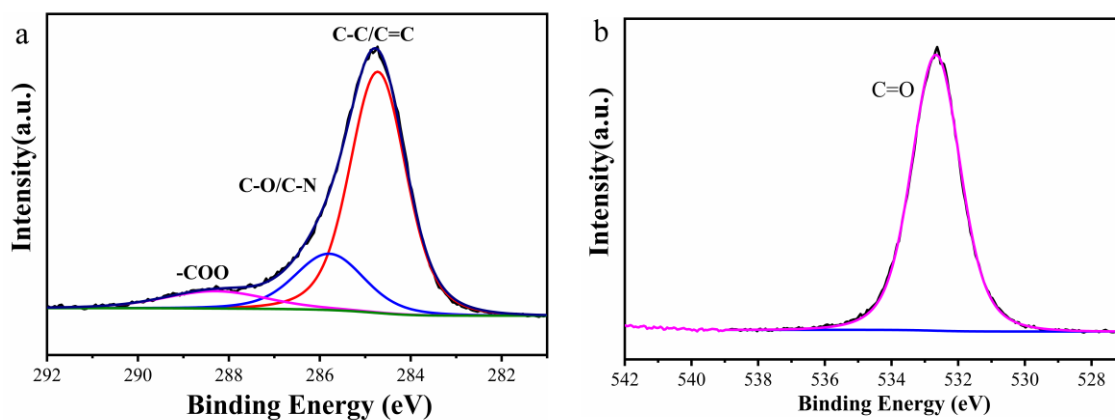


Figure S3. (a) High-resolution spectrum of C1s. (b) High-resolution spectrum of O1s.

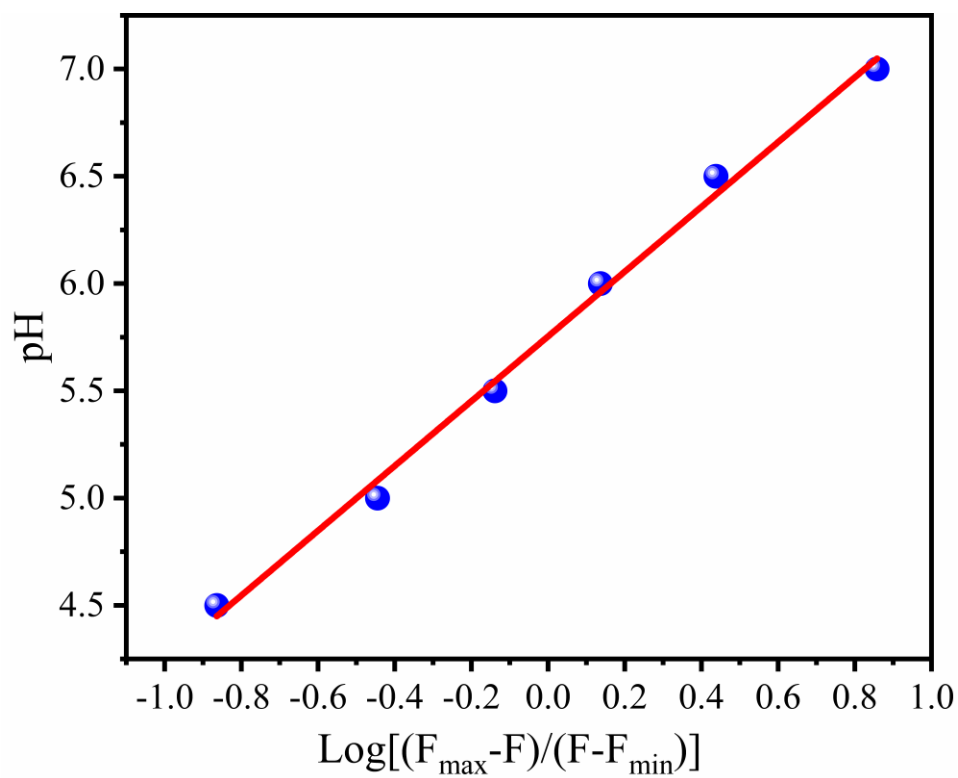


Figure S4. Fitting curve of the Henderson-Hasselbalch equation ($R^2 = 0.99$).

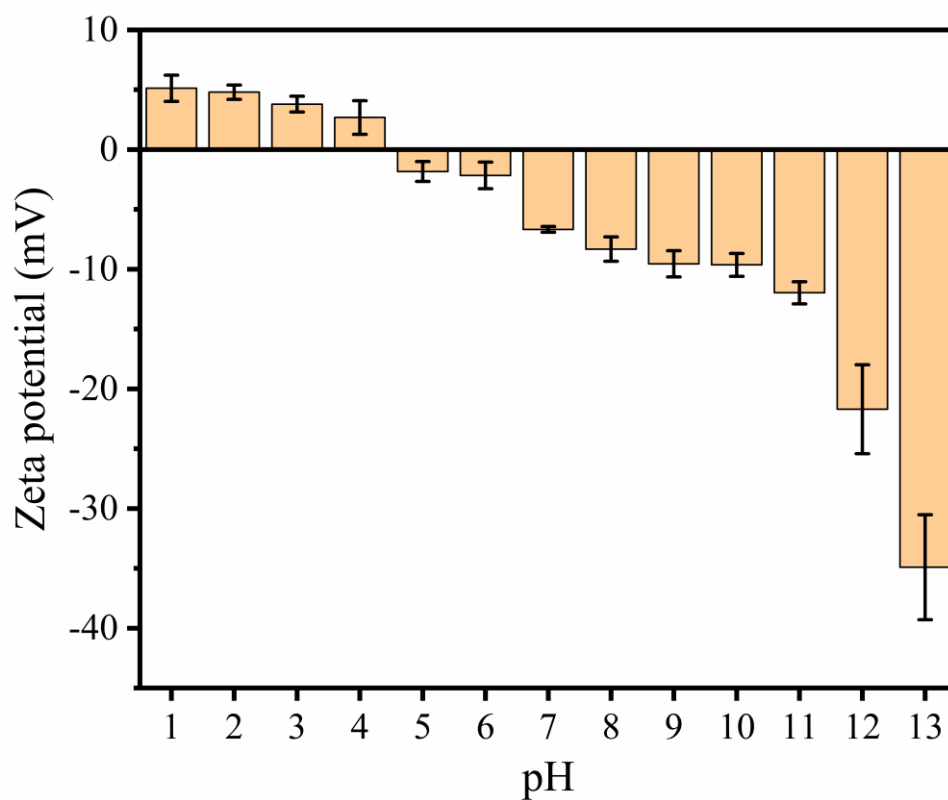


Figure S5. Zeta potentials of MR-CDs in buffer solutions of different pH value.

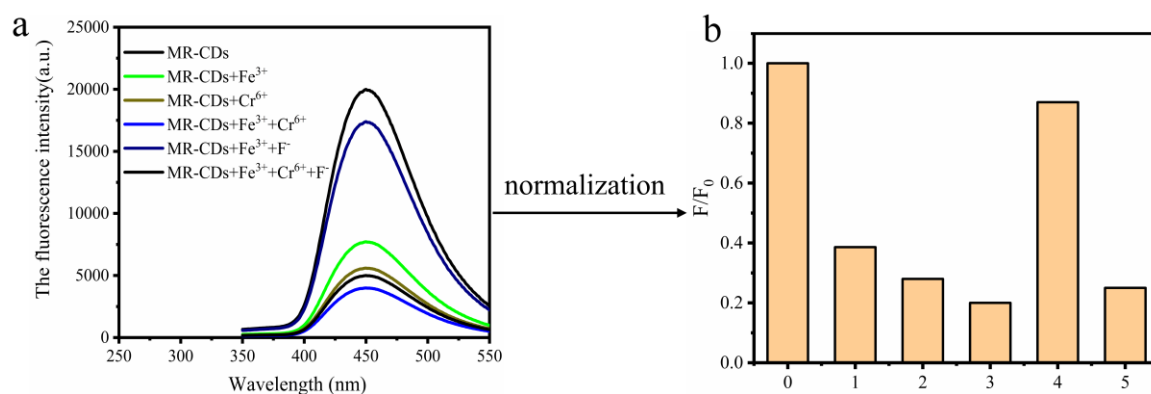


Figure S6. (a) Fluorescence emission spectra of MR-CDs with Fe³⁺, Cr⁶⁺ and F⁻ ions (the concentration of Fe³⁺, Cr⁶⁺ and F⁻ were 100 μ M, 100 μ M and 1 μ M, respectively). (b) Fluorescence quenching efficiency of various ions. (0: MR-CDs, 1: MR-CDs+Fe³⁺, 2: MR-CDs+Cr⁶⁺, 3: MR-CDs+Fe³⁺+Cr⁶⁺, 4: MR-CDs+Fe³⁺+F⁻, 5: MR-CDs+Fe³⁺+Cr⁶⁺+F⁻)

References

1. Hodge, J.E. Dehydrated Foods, Chemistry of Browning Reactions in Model Systems. *Journal of Agricultural and Food Chemistry* **1953**, *1*, 928-943, doi:10.1021/jf60015a004.