

Supplementary file

Developing and characterizing magnetic nanocomposites for effective metal ion removal in wastewater treatment

Yingtao Sun, Zhenhua Wei, Di Bian, Jianfeng Zhou*

School of Mechanical and Power Engineering, Nanjing Tech University, Nanjing 211816, P. R. China

E-mail address: Yingtao.sun@connect.ust.hk (Y. Sun); weizhenhua157359@163.com (Z. Wei);

bd@njtech.edu.cn (D. Bian); zhoujianfeng@njtech.edu.cn (J. Zhou).

* Corresponding author (ORCID: 0000-0003-4413-6375)

Sun, Y., Wei, Z., Bian, D., Zhou, J. Developing and characterizing magnetic nanocomposites for effective metal ion removal in wastewater treatment. Capillarity, 2025, 16(2): 51-60.

The link to this file is: <https://doi.org/10.46690/capi.2025.08.03>

The N₂ adsorption and desorption isotherms for Fe₃O₄, Fe₃O₄/MAC, and Fe₃O₄/BPEI are shown in Fig. S1.

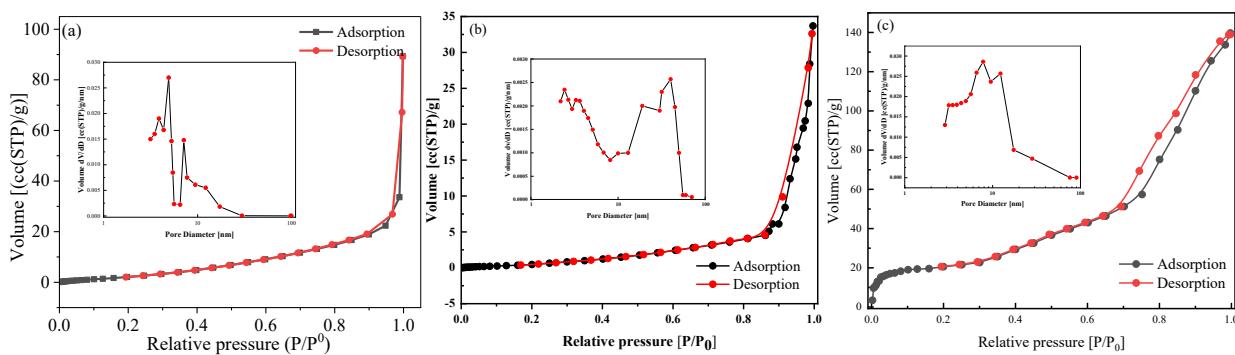


Fig. S1. N₂ adsorption and desorption isotherm (a) Fe₃O₄, (b) Fe₃O₄/SAC and (c) Fe₃O₄/BPEI.

Furthermore, the adsorbents in this study are compared with those from other literature after 10 cycles, as shown in Table S1.

Table. S1. Comparison of adsorption performance after 10 cycles

Adsorption ability (%)	Adsorbents
57.89	Fe ₃ O ₄ /BPEI (This study)
48.31	Fe ₃ O ₄ /SAC (This study)
51.9	CH-TNP (El et al., 2021)
60	MOC (Ajmal et al., 2005)
79.0	CuFe ₂ O ₄ /DC (Khan et al., 2019)
39.0	BPBs (Kapoor et al., 2022)

References

- Ajmal, M., Rao, R. A. K., Khan, M. A. Adsorption of copper from aqueous solution on Brassica cumpestris (mustard oil cake). Journal of hazardous materials, 2005, 122(1-2): 177-183.
- El, K. B. R., Khan, M.A., Wabaidur, S.M., et al. Chitosan/Phosphate Rock-Derived natural polymeric composite to sequester divalent copper ions from water. Nanomaterials, 2021, 11: 2028.
- Kapoor, R. T., Rafatullah, M., Siddiqui, M. R., et al. Removal of reactive black 5 dye by banana peel biochar and evaluation of its phytotoxicity on tomato. Sustainability, 2022, 14(7): 4176.
- Khan, M. A., Otero, M., Kazi, M., et al. Unary and binary adsorption studies of lead and malachite green onto a nanomagnetic copper ferrite/drumstick pod biomass composite. Journal of Hazardous Materials, 2019, 365: 759-770.