Biomass Mediated Functionalized Composite for Environmental Application

Changlei XIA

Nanjing Forestry University, Nanjing, Jiangsu, CHINA
changlei.xia@njfu.edu.cn

The growth of the human population and activities leads to environmental pollution such as microplastics, metal ions, and organic dyes. The water bodies pollution problem needs to be urgently treated. Biomass materials such as plant polyphenols and woods play critical roles in wastewater treatment owing to their environmentally friendly, renewability, and unique physicochemical properties. Meanwhile, nanomaterials were supposed to have a vast potential as functional materials in environmental engineering. However, there are challenges with nanocomplex for recyclability, reliable/stable, and scale-up industrial integration. Here, this report will summarize that we have worked on wastewater treatment based on biomass materials [1-5]. A series of versatile, low-cost, stable, and recycled easily, systematic, and simple integrating platforms were nano-engineered by a simple, fast self-assembly strategy based on natural biomass materials to explore contaminant removal, which presented an excellent removal property. We are guided by the concept of green and sustainable preparation technology, using low-cost, renewable natural biomass to prepare high-performance wastewater treatment materials.

References

[1] X. Jin, Y. Liang, J. Wang, Q. Wang, Y. Wu, W.W.F. Chong, C. Sonne, S.S. Lam, C. Xia, *Chem. Eng. J.* **457** 141142 (2023)
[2] R. Yang, Q. Cao, Y. Liang, S. Hong, C. Xia, Y. Wu, J. Li, L. Cai, C. Sonne, Q. Van Le, *Chem. Eng. J.* **401** 126150 (2020)
[3] C. Xia, S.S. Lam, H. Zhong, E. Fabbri, C. Sonne, *Science* **378** 842-842 (2022)
[4] Y. Liang, X. Jin, X. Xu, Y. Wu, A.A. Ghfar, S.S. Lam, C. Sonne, T.M. Aminabhavi, C. Xia, *Sci. Total Environ.* **912** 168873 (2024)
[5] X. Jin, X. Li, Y. Liu, Y. Cui, Y. Liang, Q. Wang, J. Wang, R. Yang, J. Zhao, C. Xia, *J. Hazard. Mater.* 134183 (2024)

Biomass mediated functionalized composite for environmental application

Changlei XIA

Nanjing Forestry University, Nanjing, Jiangsu, CHINA
changlei.xia@njfu.edu.cn

BIO

Prof. Dr. Changlei Xia, Associate Dean of the College of Materials Science and Engineering at Nanjing Forestry University, obtained Ph.D. in Mechanical and Energy Engineering from the University of North Texas (2016), BS (2007) and MS (2010) degrees both in Polymer Science and Engineering from University of Science and Technology of China. He worked as a Postdoctoral Fellow at University of Cincinnati and University of North Texas (2016-2019), respectively. He has published over 200 papers in the field of biomass-derived materials and energy, with a H-index of 50 (Google Scholar in July 2024). He also services as Associate Editor in Alexandria Engineering Journal, and Guest Editors in several SCI journals (e.g., Environmental Pollution, etc.).