

***** Report Title*****

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Abstract

Enzymes are nature's catalysts, featuring high reactivity, selectivity, and specificity under mild conditions. Enzymatic catalysis has long been of great interest to chemical, pharmaceutical, and food industries. However, the use of enzymes for industrial applications is often handicapped by their low operational stability, difficult recovery, and lack of reusability under operational conditions. Immobilization of enzymes on solid supports can enhance enzyme stability as well as facilitate separation and recovery for reuse while maintaining activity and selectivity. As new classes of crystalline solid-state materials, porous frameworks materials (such as covalent-organic frameworks, COFs and metal-organic frameworks, MOFs) feature high surface area, tunable pore size, high stability, and easily tailored functionality, which entitle them as ideal supports for encapsulation of biomolecules to form novel composite materials for various applications. Our researches mainly focus on their biocatalysis, biomimetic and medicinal applications. This novel platform based on those biomolecule-incorporation composite materials exhibited various functionality and superior separation efficiency, biocatalytic performances and great potentials on biopharmaceutical formulations.

Brief Biography

Dr. Yao Chen obtained master degree from Nanjing Tech University, then obtained Ph.D degree from University of South Florida. After finished a postdoc training at UC San Diego, she moved back to China, and is now a full professor of State Key Laboratory of Medicinal Chemical Biology and College of Pharmacy at Nankai University. Her research interest mostly focuses on incorporating biomolecule into porous supports (e.g. MOFs, COFs) for bio-related and medicinal applications. She has published more than 40 research papers, and 21 leading author or corresponding author papers including *JACS*, *Angew Chem*, *Adv. Mater.*, *Coord. Chem. Rev.*, *Chem. Commun.*, etc. She was awarded the Young 1000 talent program of Tianjin Government (2017) and the Chinese Government Award for Outstanding Self-Financed Students Abroad (2014). Her Current research interest focuses on the construction of biomolecule-incorporation composite materials with various functionality, and their biological and medicinal related applications, such as biocatalysis, chiral separation and medicinal applications.

Brief CV

Yao Chen, Ph.D.

State Key Laboratory of Medicinal Chemical Biology/College of Pharmacy, Nankai University, China

Education:

M.S. Microbiology, Nanjing Tech University, China, 2009

Ph.D. Chemistry, University of South Florida, US, 2014

Professional Career:

2014-2016: University of California, San Diego , US, Postdoctoral Fellow.

2016-Present: Nankai University, China, Professor.

Research Interests:

1. Enzyme-immobilization and heterogeneous biocatalysis
2. Biomedical applications of functional porous materials
3. Bio-separation

Selected publications

1. Liu, J. et al. *J. Am Chem. Soc.* 2019, 141, 30
2. Wang, Z. et al. *ACS Cent. Sci.*, 2019, doi.org/10.1021/acscentsci.9b00212
3. An, H. et al. *Coordin. Chem. Rev.* 2019, 384, 90-106.
4. Zhang, S. et al. *Angew. Chem. Int. Ed.* 2018, 57, 16754–16759.
5. Feng, Y. et al. *Adv. Mater.*, 2018, 1805148.