

## Noncovalent $\pi$ -stacked Organic Framework ( $\pi$ OF)



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Venue: N23-1004b

Time: 10:30 – 11:30

Hosted by: Prof. Pengzhan SUN

### Abstract

Unlike metal-organic frameworks (MOFs) and covalent organic frameworks (COFs) assembled through strong coordination or covalent bonds, novel porous organic molecular materials based on non-covalent interactions have garnered significant attention due to their simple structural units and the flexibility of their supramolecular assemblies. Noncovalent  $\pi$ -stacked organic frameworks ( $\pi$ OFs) are a subclass of porous materials that consist of crystalline networks formed by self-assembly of organic building blocks through  $\pi$ - $\pi$  interactions. The flexible, reversible, and conductive nature of  $\pi$ - $\pi$  interactions and  $\pi$ -delocalized supramolecular frameworks impart advantageous attributes to  $\pi$ OFs, including solution processability, self-healing capability, notable carrier mobility and excellent stability. These features make  $\pi$ OFs ideal candidates for applications like gas separation, molecular structure determination, and electrocatalysis. Since the concept was introduced in 2020, significant advancements have been made in both the chemistry and applications of  $\pi$ OFs. Future research should focus on expanding their structural diversity and exploring new applications, particularly in areas where traditional porous materials encounter limitations. [1, 2].

### References

- [1] Meng, D.; Yang, J. L.; Xiao, C.; Wang, R.; et al. Proc. Natl. Acad. Sci. U S A (PNAS) 2020, 117, 20397.
- [2] Zheng, R.; Meng, D.; Yang, Y. Materials Today 2024, 75, 244.

### Biography

Prof. Dong MENG joined the School of Chemistry and Chemical Engineering at Shanghai Jiao Tong University in July 2023 as associate professor, and doctoral supervisor. He received PhD degree in the Institute of Chemistry at Chinese Academy of Sciences in 2017. From 2017 to 2023, he worked as a postdoctoral research fellow at University of California, Los Angeles (UCLA). He was awarded with National Young Overseas High-Level Talents, Shanghai Young Overseas High-Level Talents, Fellow of International Association of Advanced Materials, IAAM Young Scientist Award, Vebleo Fellow Jr. and Chinese Dean of Science Institute Award. He serves as an Early Career Board Member of journals including Precision Chemistry, Applied Chemistry etc. To date, he has published over 50 papers in high-impact journals including Sci Adv, J. Am. Chem. Soc., PNAS, Adv. Mater. etc., with over 6000 citations and an h-index of 34.