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**Design of a metal-organic framework with flame-retardant performance and bionic**

**hydrophobic surface inspired by lotus leaf**

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## 1. Experimental part

### 1.1 The synthesis of Fe-MOF.

The preparation method of Fe-MOF was referred to our previous work.<sup>1</sup> Firstly, 2.67 g TPA and 4.374 g  $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$  were dissolved in 30 mL DMF. Then, the mixture was transferred to a hydrothermal reactor at 200 °C for 4 h. Finally, the sample was washed 3 times with DMF to remove impurities. The powder was dried in a 60 °C oven for 8 h to obtain Fe-MOF.

### 1.2 Synthesis method of the functionalized MOF (T-Fe-MOF).

T-Fe-MOF was prepared according to the method described in our previous study.<sup>1</sup> Firstly, 0.5 g Fe-MOF and 0.5 mL ammonia were placed on two sides of a petri dish to avoid direct contact and stood for 1 h in a closed environment at 30 °C. The sample was washed 2 times with DMF. The powder was dried in a 60 °C oven for 8 h to obtain the porous MOF (P-Fe-MOF). Then, 0.5 g P-Fe-MOF was dispersed in 10 mL TEP and stirred for 8 h. The mixture was stood at 80 °C for 12 h. Finally, the samples were filtered and dried in a 70 °C oven for 12 h to obtain T-Fe-MOF.

## Reference

1. H.-D. Zhao, B.-H. Yuan, Y.-Y. Zhan, F.-Z. Yang, J.-J. Zhou, C.-R. Qi, et al. *Compos. Part. A-Appl S.*, 159, 2022, 107003.