

## Supporting Information

### **Turn-on fluorescent sensor based on curcumin@MOF-5 for the sensitive detection of Al<sup>3+</sup>**

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The standard curve of curcumin fluorescence intensity was determined in 95 % ethanol solution. 5 mg curcumin@MOF-5 sample was dissolved in 10 mL 95 % ethanol solution and the solution was treated by ultrasound for 1 h and then placed for 24 h, so that the MOF material was completely destroyed and the curcumin molecule was completely released. The fluorescence intensity of the solution was measured.

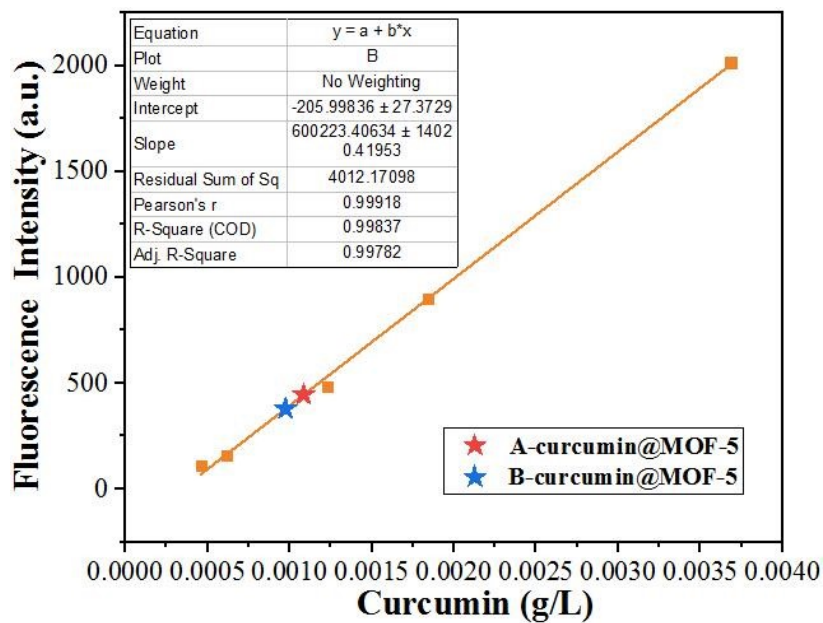


Fig. S1. The standard fluorescence intensity curve of curcumin solution (square) and the fluorescence intensity of the damaged curcumin@MOF-5 samples (asterisk).

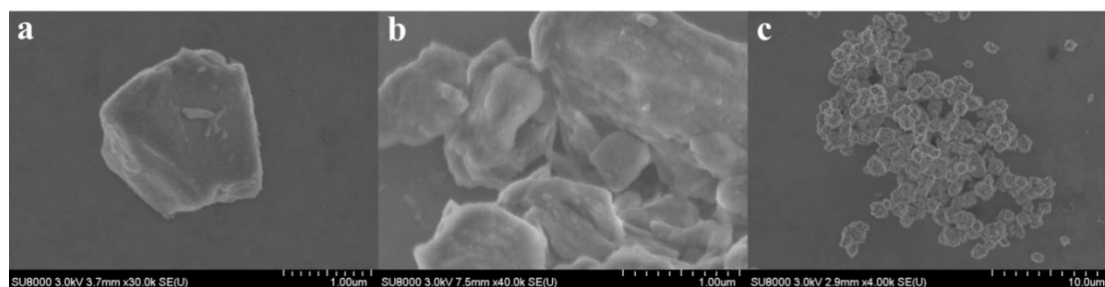


Fig. S2. The SEM images of MOF-5 (a), A-curcumin@MOF-5 (b), B-curcumin@MOF-5 (c).

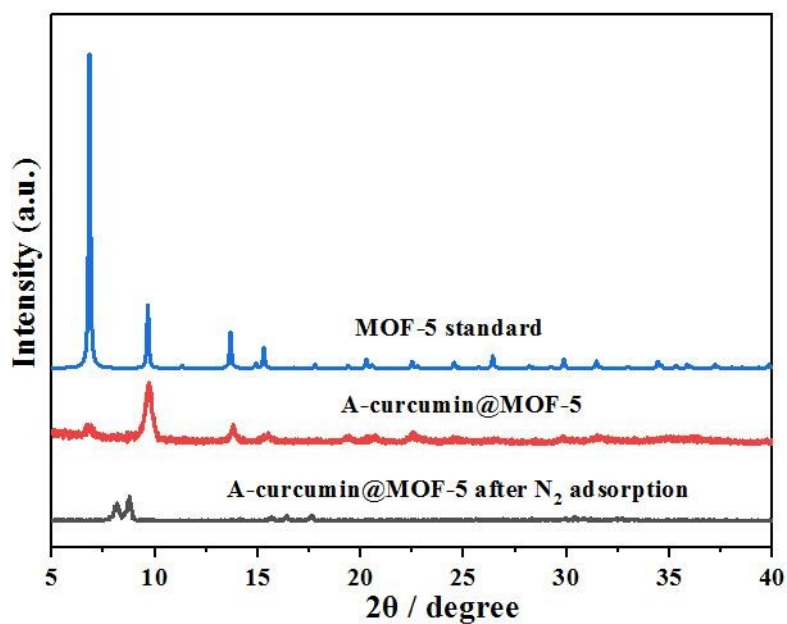


Fig.S3. XRD patterns of A-curcumin@MOF-5 after N<sub>2</sub> adsorption.

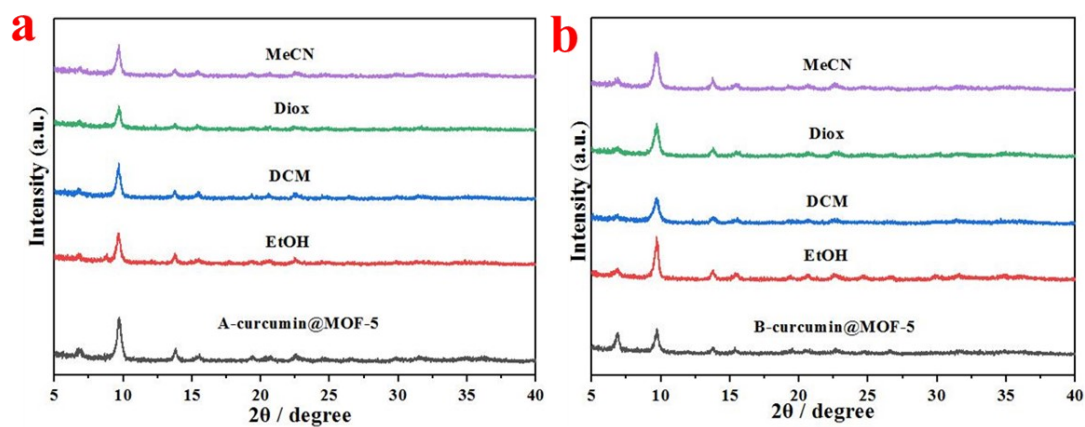


Fig. S4. The XRD of the samples after immersing in different solutions for 1 h at room temperature.

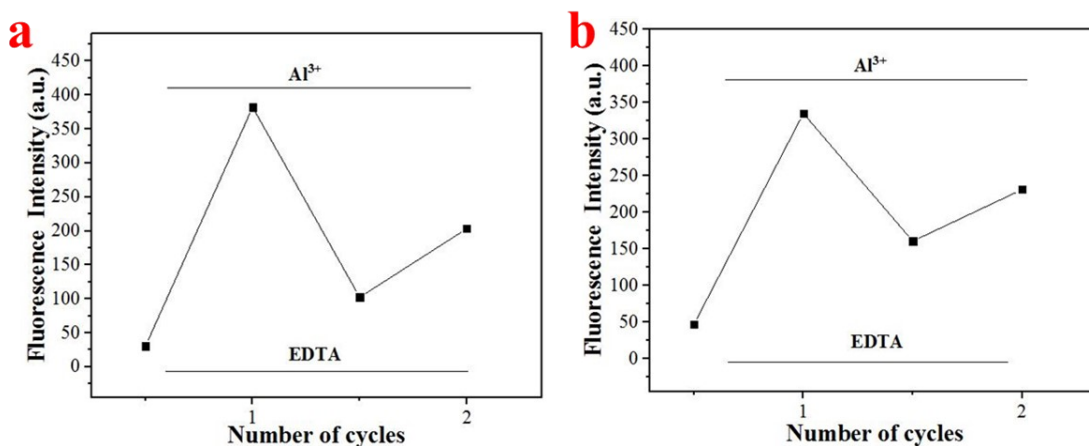


Fig. S5. The fluorescence intensity of A-curcumin@MOF-5 (a), B-curcumin@MOF-5 (b) at 533 nm in the presence and absence of  $\text{Al}^{3+}$  and EDTA.

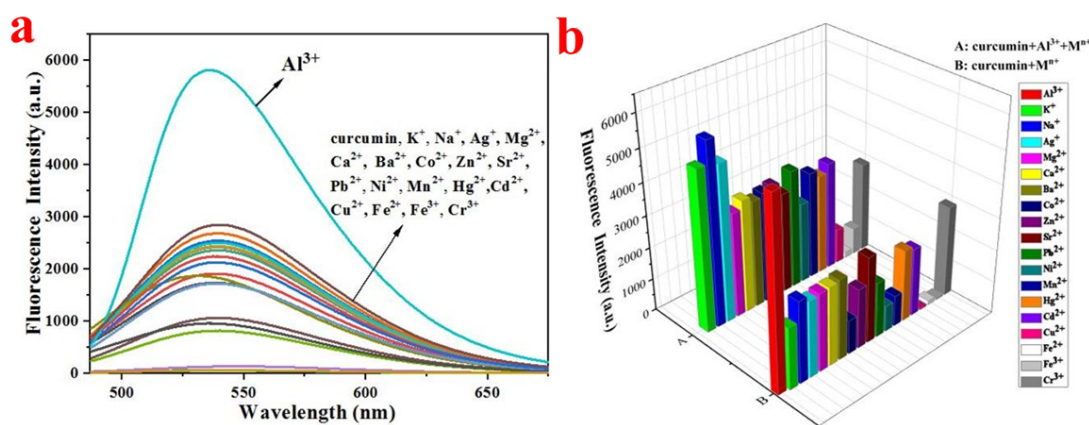


Fig. S6. The selectivity test of curcumin for metal ions in ethanol ( $\lambda_{\text{ex}} = 467 \text{ nm}$ ); (b) Anti-interference experiment of curcumin for specific recognition of  $\text{Al}^{3+}$  in ethanol ( $\lambda_{\text{ex}} = 467 \text{ nm}$ ;  $\lambda_{\text{em}} = 533 \text{ nm}$ )

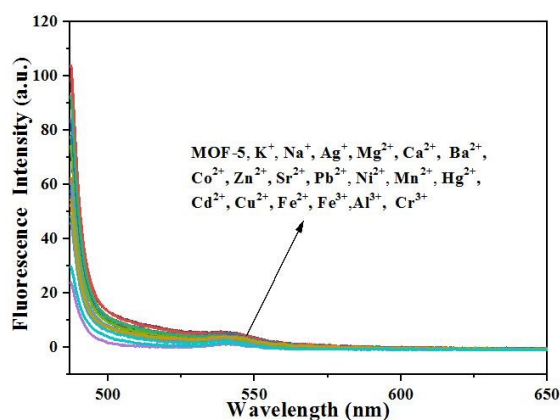


Fig. S7. The selectivity test of MOF-5 for metal ions in ethanol ( $\lambda_{\text{ex}} = 467 \text{ nm}$ ).

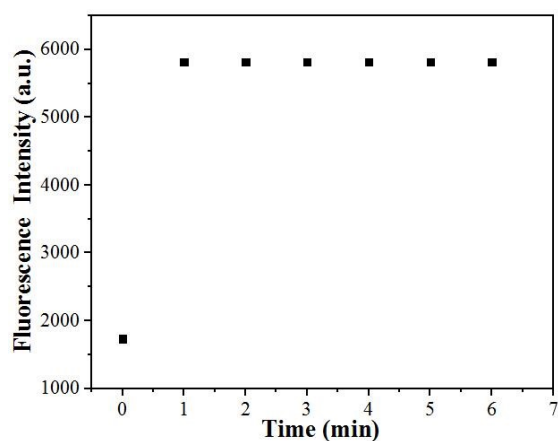


Fig. S8. Time curve of fluorescence intensity of curcumin with  $\text{Al}^{3+}$  in ethanol.

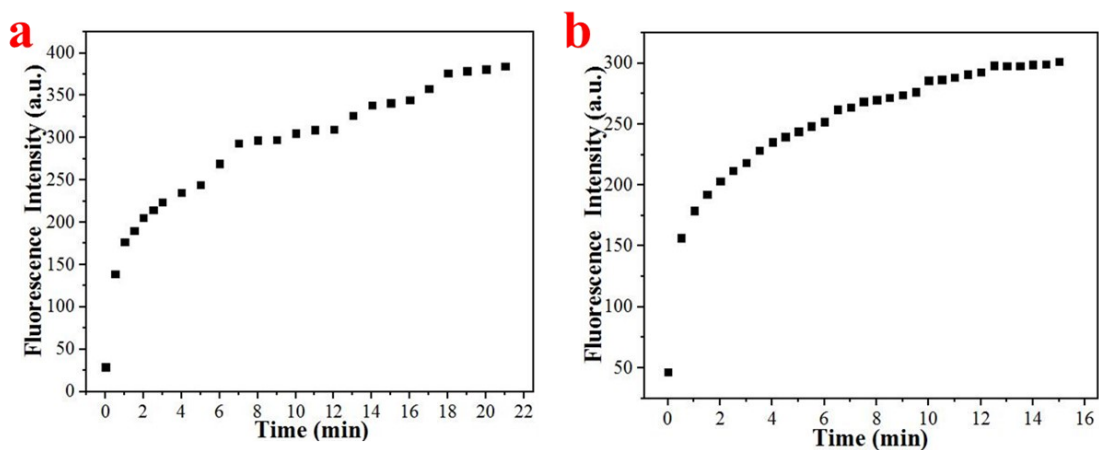


Fig. S9. Time curve of fluorescence intensity of A-curcumin@MOF-5 (a), B-curcumin@MOF-5 (b) with  $\text{Al}^{3+}$  in ethanol.