

Supplementary Information

Biohybrid Microrobots with Spirulina Skeleton and MOFs Skin for Efficient Organic Pollutant Adsorption

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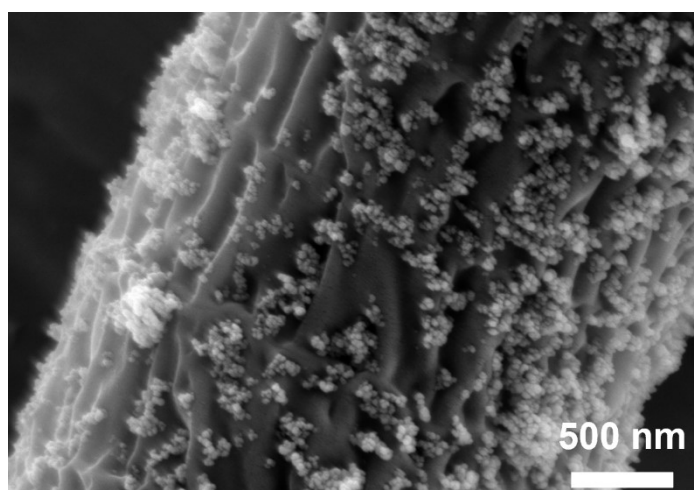


Figure S1. SEM image of the local location of Spirulina@Fe₃O₄ composite microrobots, scale bar: 500 nm.

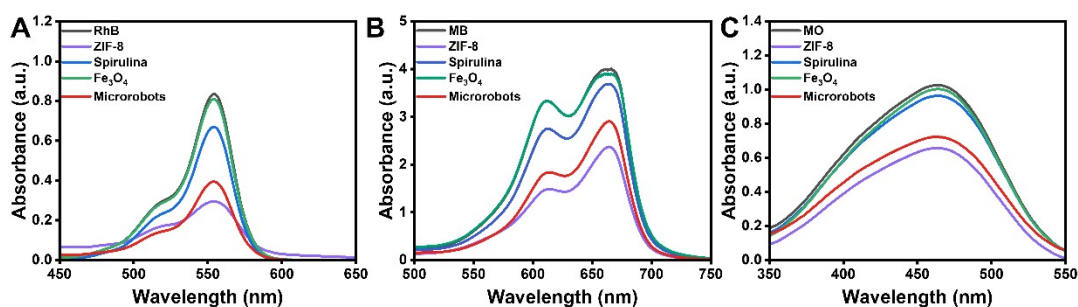


Figure S2. (A-C) Comparison of UV Visible Spectral Absorption of ZIF-8, Spirulina, Fe₃O₄, and Spirulina@MOFs microrobots under Rhodamine B, Methylene Blue, and Methyl Orange Dyes.

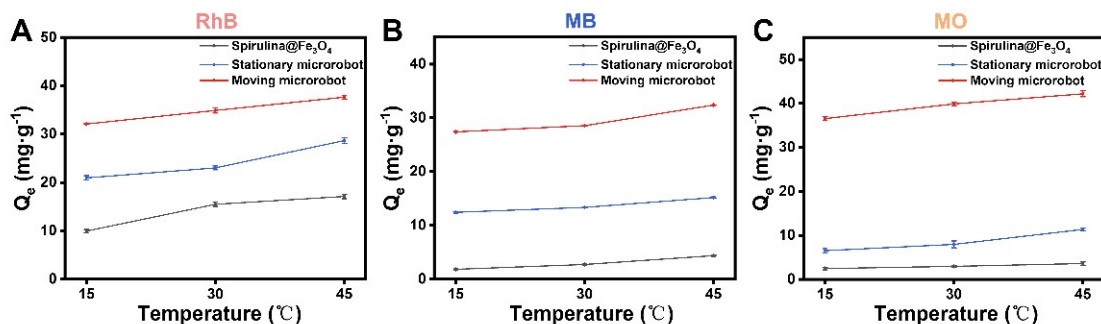


Figure S3. (A-C) Adsorption capacities of Spirulina@Fe₃O₄, mobile microrobots, and fixed microrobots under Rhodamine B, Methylene Blue, and Methyl Orange dyes as a function of temperature

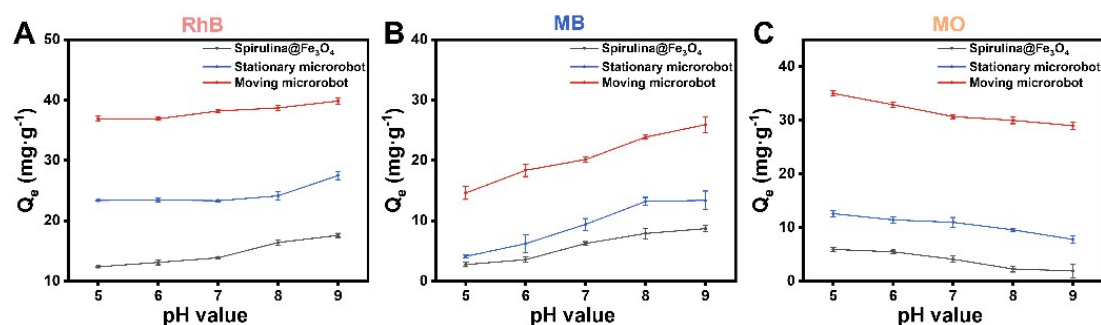


Figure S4. (A-C) Adsorption capacities of Spirulina@Fe₃O₄, mobile microrobots, and fixed microrobots under Rhodamine B, Methylene Blue, and Methyl Orange dyes as a function of pH value.

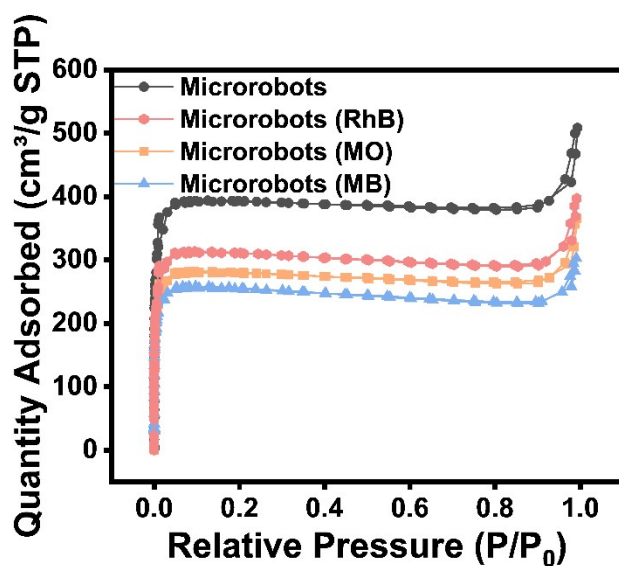


Figure S5. (F) N₂ adsorption-desorption isotherms of Spirulina@MOFs microrobots and Spirulina@MOFs microrobots after cycling with different dyes

Table 1. Maximum adsorption capacity of RhB by different adsorbents

Adsorbent	Time (min)	Adsorption capacity (mg/g)	References
2D A-ZIF-8	60	46.5	1

ZIF-8@ZIF-67	120	143.26	2
ZIF-CZIF-867	75	137.1	3
Zn/Co@C-800	250	92.72	4
US1	120	25	5
Spirulina@MOFs	10	47.77	This work

Table 2. Maximum adsorption capacity of MB by different adsorbents

Adsorbent	Time (min)	Adsorption capacity (mg/g)	References
US1	120	46.6	5
plant essential oils@ γ - CD/ZIF-8	200	111.6	6
ZIF-8 (AA)	120	12.51	7
CuS/Zeolite A/ZIF-8	60	12.45	8
NZIF	30	9.7	9
Spirulina@MOFs	10	31.03	This work

Table 3. Maximum adsorption capacity of MO by different adsorbents

Adsorbent	Time (min)	Adsorption capacity (mg/g)	References
ZIF-8	60	45.83	10
Mn@ZIF-8	360	55.03	11
2D A-ZIF-8	60	46.3	1
SA/PVA/ZIF-8	180	20.83	12
US1	120	10.1	5
Spirulina@MOFs	10	31.03	This work

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