Supplementary materials

Zeolitic Imidazole Framework-90-Based Pesticide Smart-Delivery System with Enhanced Antimicrobial Performance

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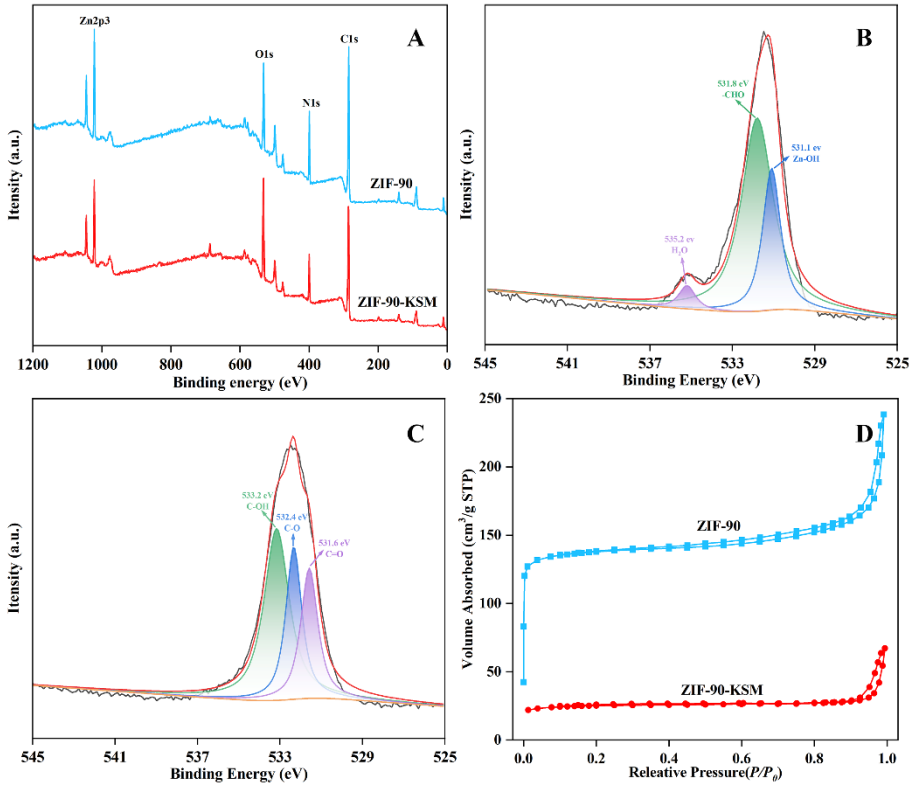

Figure S1. Broad range XPS spectra of ZIF-90 and ZIF-90- KSM (A). Deconvolution of the high-resolution scan of O1s spectra of ZIF-90 (B) and ZIF-90-KSM (C). N_2 adsorption–desorption isotherms of ZIF-90 and ZIF-90-KSM (D)

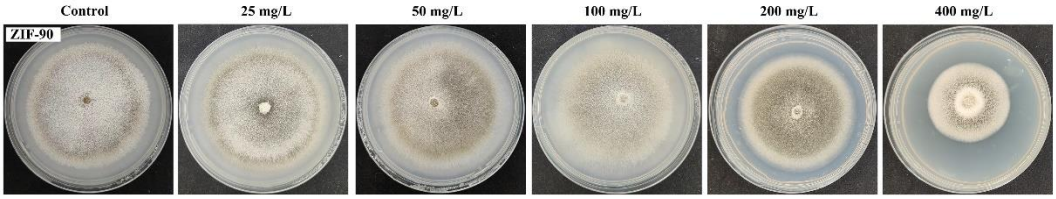

Figure S2. Images of the fungicidal activity of ZIF-90 against *Magnaporthe oryzae*

Table S1. Surface and porosity properties of the samples.

Sample	BET surface area (m^2/g)	Pore volume (cm^3/g)	Average pore size (nm)
ZIF-90	553.26	0.27	2.00
ZIF-90-KSM	96.60	0.06	2.43

Table S2. Comparison of various carriers used to protect KSM from photolysis.

Carrier	UV-light stability			Ref.
	UV Light	Sample state	Degradation rate	
Pectin-conjugated silica microcapsules	light intensity, 700 μW cm^{-2}	Suspension in PBS solution	The degradation is 5 times lower than that of technical after 60 h	[29]
Pectin	light intensity, 700 μW cm^{-2}	Suspension in PBS solution	Reduced degradation by approximately 30%	[41]
Silica nanospheres	light intensity, 700 μW cm^{-2}	Suspension in PBS solution	The degradation is 4 times lower than that of technical after 72 h	[42]

Table S3. Fungicidal activity of KSM formulations as KSM aqueous solution and ZIF-90-KSM against *Magnaporthe oryzae*.

Treatment	Regression equation	EC_{50} (95% confidence interval) (mg/L)	Correlation coefficient (*r*)
KSM aqueous solution	y=0.79+1.20x	4.54 (3.95-5.17)	0.987
ZIF-90-KSM	y=0.65+1.76x	2.33 (2.04-2.61)	0.993

Notes: EC_{50} Inhibitory concentration that inhibit 50% of the exposed fungus.

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