Supporting Information

Integrating Metal–Organic Frameworks and Polyamide 12 for Advanced Hydrogen Storage Through Powder Bed Fusion

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Table S1. Experimental data for different weight percentages of in situ ZIF67-PA12 samples.

Sample	Weight of cobalt nitrate hexahydrate (g)	Weight of PA12 (g)	Weight of 2-methylimidazole (g)	Stirring time (h)	Yield (%)
ZIF67	0.45	0	5.5	24	35.02
ZIF67-PA12-2(p)	0.13	5	8.8	24	75.69
ZIF67-PA12-10(p)	0.66	4.5	4.45	24	93.6
ZIF67-PA12-15(p)	0.987	4.25	6.68	24	94.1
ZIF67-PA12-20(p)	1.32	4	8.95	24	97.86
ZIF67-PA12-30(p)	1.97	1.5	13.37	24	61.5

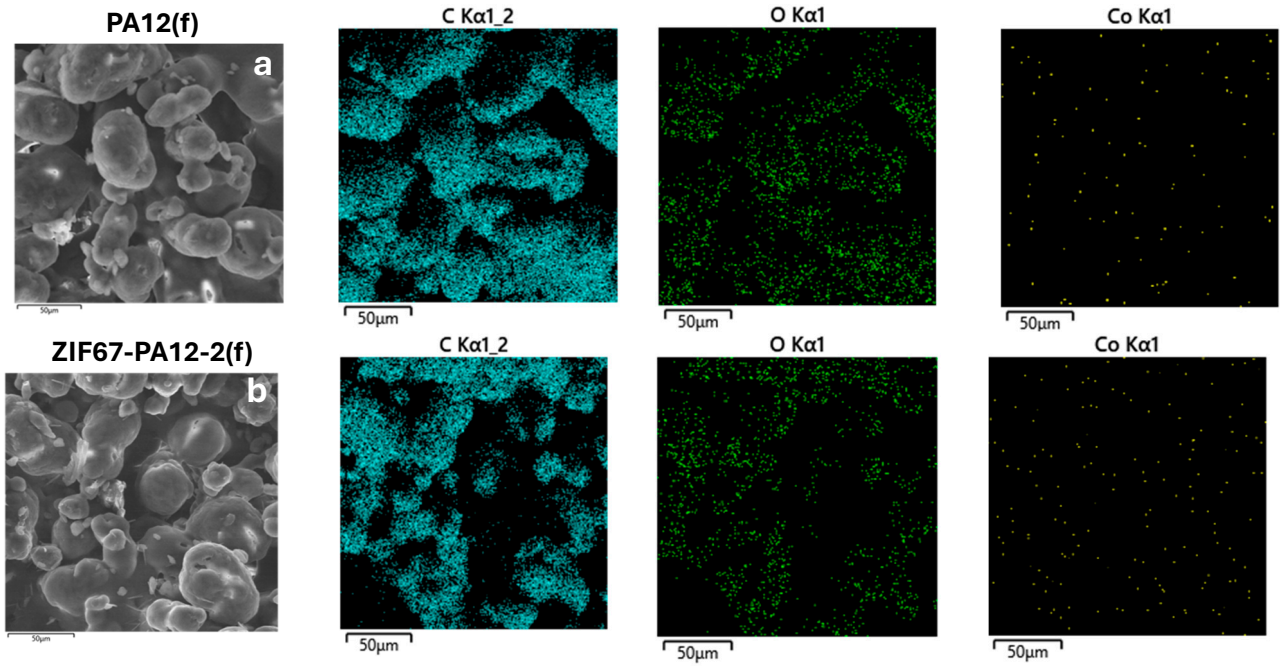
Table S2. Experimental data for different weight percentages of ex situ ZIF67-PA12 samples.

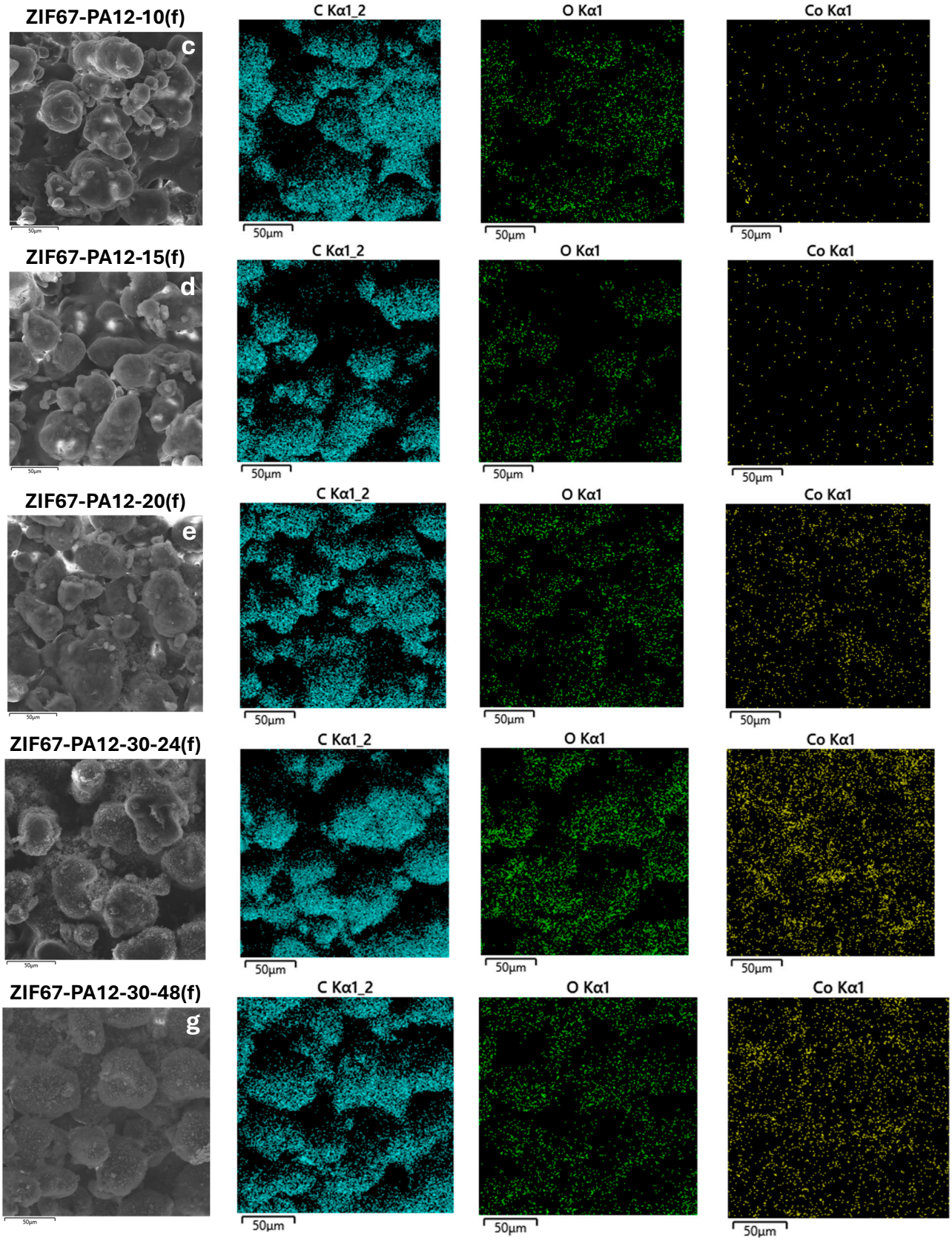
Sample	Weight of Cobalt nitrate hexahydrate (g)	Weight of printed PA12 film (g)	Weight of 2-methylimidazole (g)	Stirring time (h)
ZIF67-PA12-2(f)	0.00253	0.09414	0.01711	24
ZIF67-PA12-10(f)	0.01394	0.09530	0.09438	24
ZIF67-PA12-15(f)	0.02169	0.09340	0.14687	24
ZIF67-PA12-20(f)	0.02821	0.08572	0.19098	24
ZIF67-PA12-30-24(f)	0.04524	0.08020	0.30630	24
ZIF67-PA12-30-48(f)	0.04480	0.07930	0.30300	48

ZIF67-PA12-60(f)	0.3010	0.09150	2.04000	48



Figure S1. Cross-sectional micrograph of printed PA12 film.




ZIF67-PA12-10(f)
c
C Kα1_2
O Kα1
Co Kα1
50μm
ZIF67-PA12-15(f)
d
C Kα1_2
O Kα1
Co Kα1
50μm
ZIF67-PA12-20(f)
e
C Kα1_2
O Kα1
Co Kα1
50μm
ZIF67-PA12-30-24(f)
C Kα1_2
O Kα1
Co Kα1
50μm
ZIF67-PA12-30-48(f)
g
C Kα1_2
O Kα1
Co Kα1
50μm

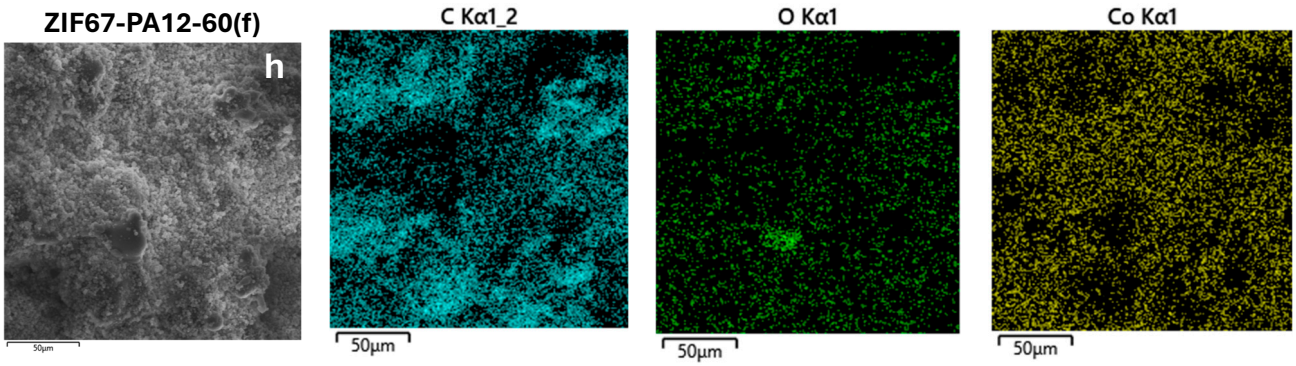


Figure S22 (a-h). Elemental mapping of PA12 film and ZIF-67 dispersion on ZIF67-PA12 film composites for mass loading (2, 10, 15, 20, 30, and 60).