

## Supplementary information for

# Encapsulation of AgInS<sub>2</sub>/GaS<sub>x</sub> core/shell quantum dots in In-fumarate metal–organic frameworks for stability enhancement

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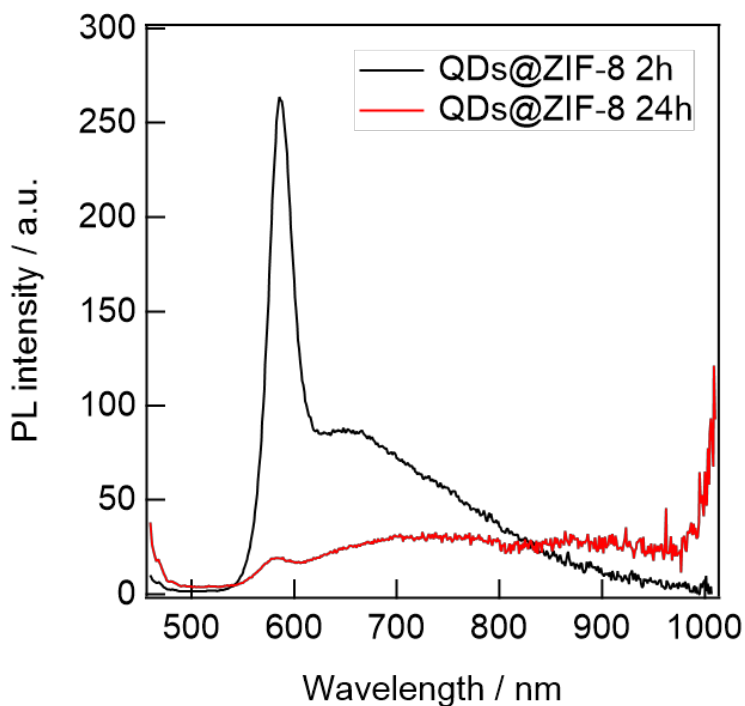


Fig. S1. PL spectra of QDs@ZIF-8 composites at different reaction times during the synthesis.

**Table S1. Size and PL properties for QDs, InMOFs, and QDs@InMOFs composites.**

Samples	Particle Size (nm)	Emission (nm)	FWHM (nm)	PLQY (%)	
				Band Edge	Overall
OLA-AgInS <sub>2</sub>	3.29±0.51 <sup>a</sup>	786	180.3	-	75.2
OLA-AgInS <sub>2</sub> /GaS <sub>x</sub>	4.89±0.74 <sup>a</sup>	574	35.9	76.4	87.4
6AH-AgInS <sub>2</sub> /GaS <sub>x</sub>	3.60±0.64 <sup>a</sup>	575	36.4	30.6	37.6
InMOFs	536±90 <sup>b</sup>	-	-	-	-
QDs@InMOFs pH 1.8	266±27 <sup>b</sup>	581	33.3	1.4	3.7
QDs@InMOFs pH 2.4	34.2±8.3 <sup>b</sup>	581	33.6	4.6	8.9
QDs@InMOFs pH 3.0	34.2±7.3 <sup>b</sup>	581	32.6	5.3	10.7
QDs@InMOFs pH 3.3	40.8±10.4 <sup>b</sup>	581	33.4	8.1	12.6

<sup>a</sup>Sizes of the QDs and <sup>b</sup>sizes of the InMOFs were provided.

**Table S2. PL decay components for pristine QDs and QDs@InMOFs composites**

Sample	$\lambda_{PL}$ (nm)	$\langle\tau\rangle$ (ns)	$\tau_1$ (ns)	A <sub>1</sub>	$\tau_2$ (ns)	A <sub>2</sub>	$\chi^2$
OLA-AgInS <sub>2</sub> /GaS <sub>x</sub>	573	84.26	46.18	945.36	172.39	109.43	1.00
6AH-AgInS <sub>2</sub> /GaS <sub>x</sub>	575	189.85	61.06	861.57	349.43	121.5	1.15
QDs@InMOFs pH 1.8	581	101.86	22.56	936.46	168.41	146.69	0.94
QDs@InMOFs pH 3.3	581	139.16	41.67	905.61	254	126.14	0.90

**Table S3. The atomic ratio (%) of each component in QDs@InMOFs composites**

Sample	S	Ag	In	Ga
QDs@InMOFs pH 1.8	1.47	0.55	97.50	0.47
QDs@InMOFs pH 2.4	1.78	0.49	97.26	0.48
QDs@InMOFs pH 3.0	2.43	0.70	96.16	0.72
QDs@InMOFs pH 3.3	2.61	0.69	96.03	0.67

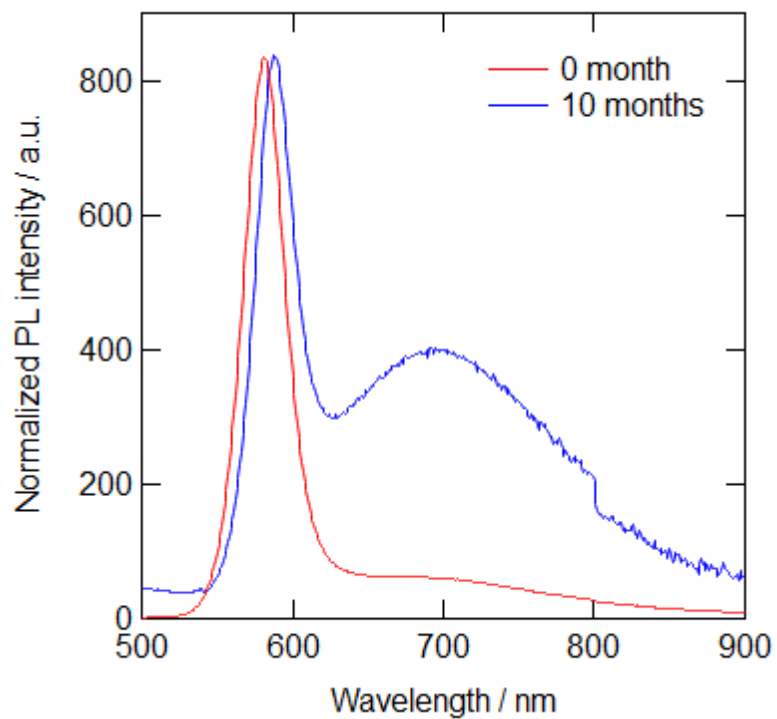


Fig. S2. PL spectra of the QDs@InMOF composites (red line) on the same day and (blue line) 10 months after preparation. The PL QYs were 12% and 5% in this order.