Supporting Information

for

Electroluminescent Guest@MOF Nanoparticles for Thin Film Optoelectronics and Solid-State Lighting

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Table S1. Values of time constants (τ_i) and normalized (to 100) fractional contributions ($c_i = \tau_i a_i$) obtained from the fit of the emission decays of Gaq3 in the powder form, upon excitation at 365 nm and observation as indicated.

Sample	λ obs / nm	τ_1 / ns	c_1	τ_2 / ns	c_2
Gaq3	**475**	**6.4**	21	**19.7**	79
	535	**5.7**	22	**19.2**	78
	550	**6.3**	26	**19.5**	74
	650	**6.6**	29	**19.2**	71

Table S2. Values of time constants (τ_i) and normalized (to 100) fractional contributions ($c_i = \tau_i a_i$) obtained from the fit of the emission decays of ZIF-8 in powder form, upon excitation at 365 nm and observation as indicated.

Sample	λ obs / nm	τ_1 / ns	c_1	τ_2 / ns	c_2
ZIF-8	**475**	**2.3**	54	**11.2**	46
	535	**2.5**	56	**11.2**	44
	600	**2.2**	42	**10.1**	57

Table S3. Values of time constants (τ_i) and normalized (to 100) fractional contributions ($c_i = \tau_i a_i$) obtained from the fit of the emission decays of Gaq3@ZIF-8 in the powder form upon excitation at 365 nm and observation as indicated.

Sample	λ obs / nm	τ_1 / ns	c_1	τ_2 / ns	c_2	τ_3 / ns	c_3
Gaq3@ZIF8 0.05 mmol	**475**	**1.1**	3	**9.4**	34	**23.9**	63
	535	**1.1**	2	**9.5**	47	**23.8**	51
	650	**-**	-	**8.8**	52	**23.9**	48
Gaq3@ZIF8 0.5 mmol	**475**	**1.1**	7	**9.1**	27	**23.7**	66
	535	**1.3**	2	**9.3**	40	**23.5**	58
	650	**-**	-	**8.9**	41	**23.2**	59
Gaq3@ZIF8 2 mmol	**475**	**1.2**	8	**6.9**	57	**20.2**	35
	535	**1.1**	3	**7.2**	60	**19.5**	37
	650	**-**	-	**7.1**	63	**19.4**	37

Figure S1. Emission spectra of pure Gaq3 in powder form and the guest@MOF composite Gaq3@ZIF-8 washed once with methanol (red solid line), and after being thoroughly washed in methanol for eight times (blue solid line). The excitation wavelength was 390 nm.

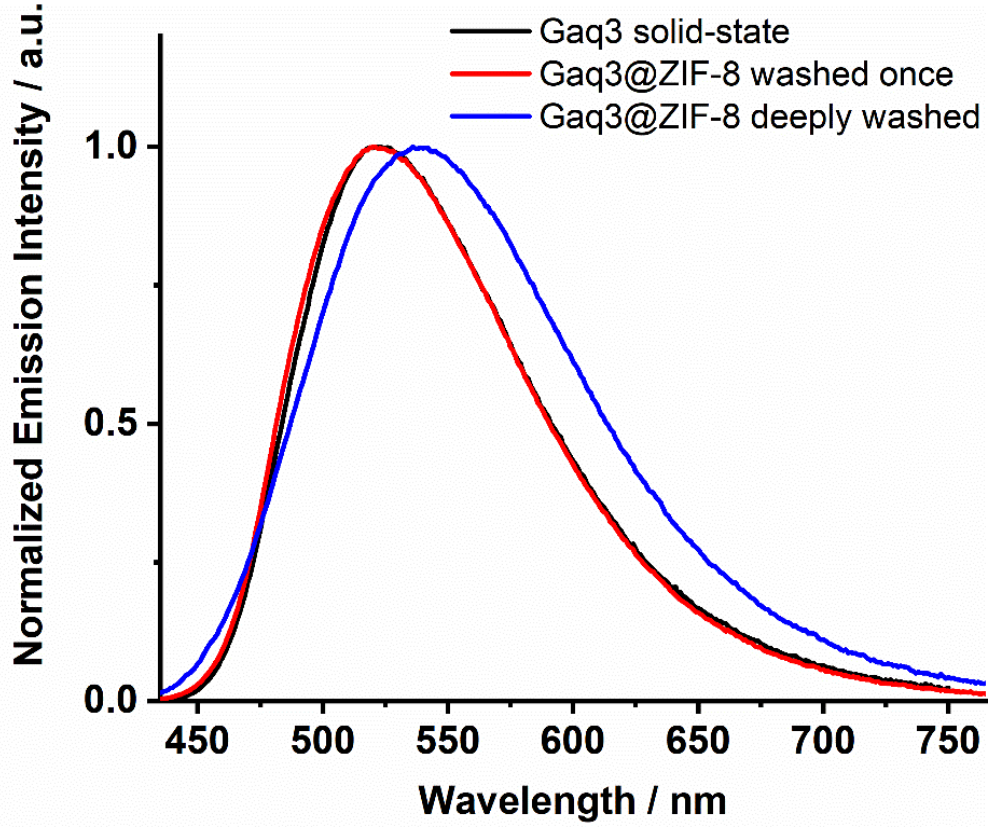

Figure S2. UV-Vis absorption, excitation and emission spectra of pure Gaq3 in **A)** DMF and **B)** acetone solvents, respectively. The observation wavelengths for the excitation spectra and the irradiation wavelengths for the emission spectra are indicated as insets.

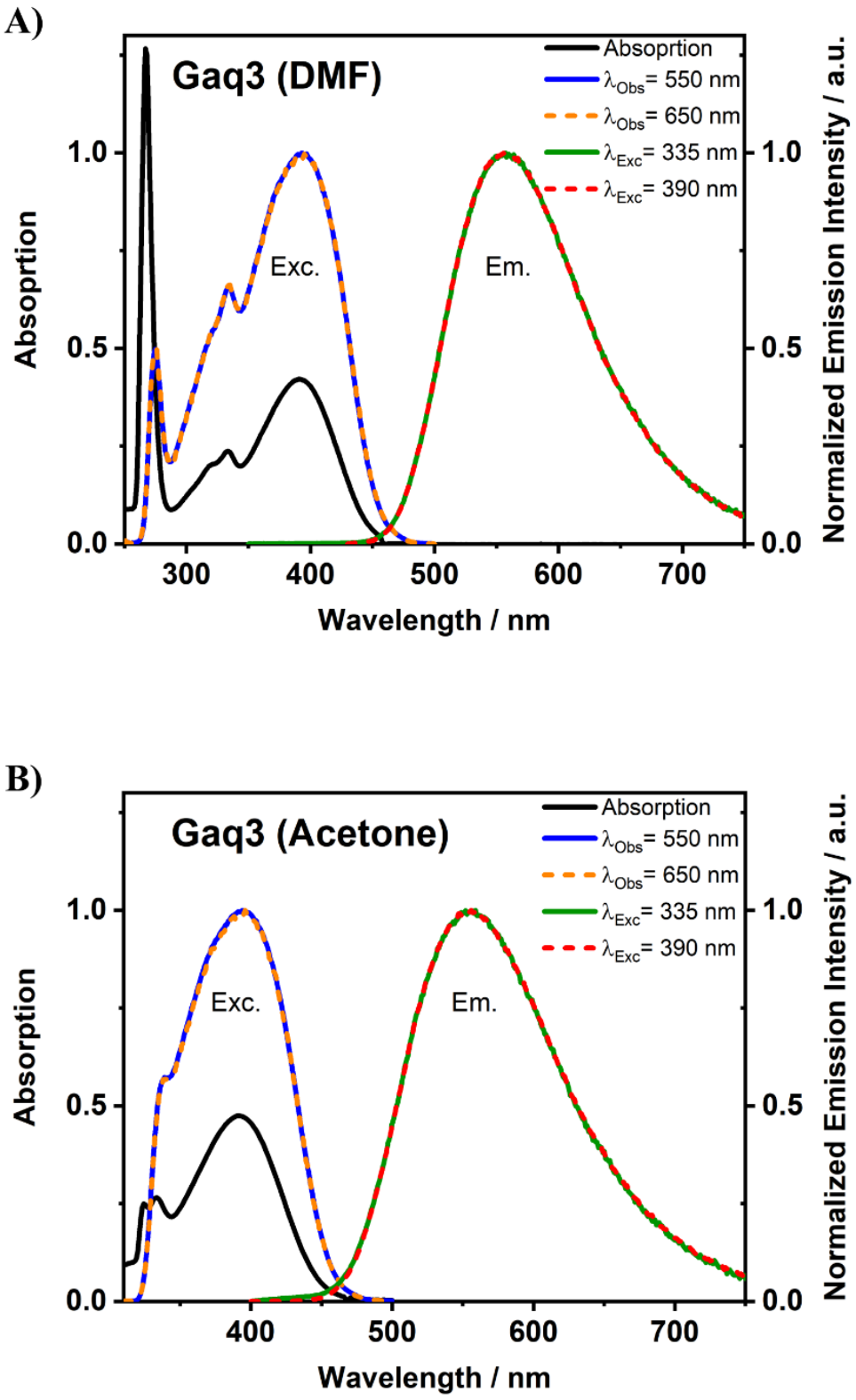

Figure S3. Emission decays of the powder samples of **A)** Gaq3, **B)** ZIF-8, **C)** Gaq3@ZIF-8 (0.05 mmol), **D)** Gaq3@ZIF-8 (0.5 mmol) and, **E)** Gaq3@ZIF-8 (2 mmol). The observation wavelengths are indicated in the figures and the samples were excited at 365 nm. The solid lines are from the best-fit using a multiexponential function, $I(t) = \sum \alpha_i \exp(-t/\tau_i)$.

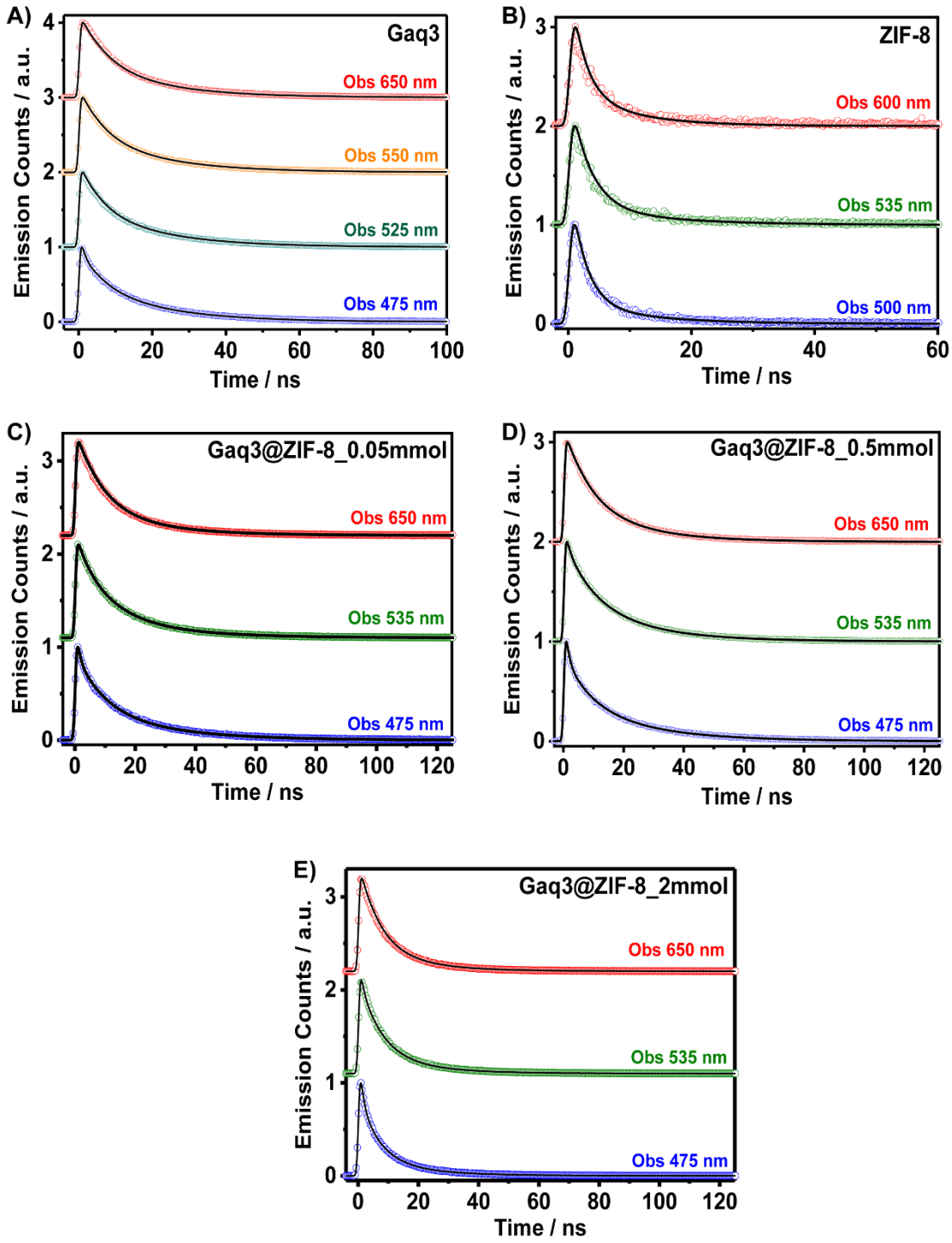

Figure S4. Representation of the spectral overlap between the absorption spectrum of Gaq3 and the emission of ZIF-8 both in powder forms. For the emission, the ZIF-8 sample was excited at 365 nm.

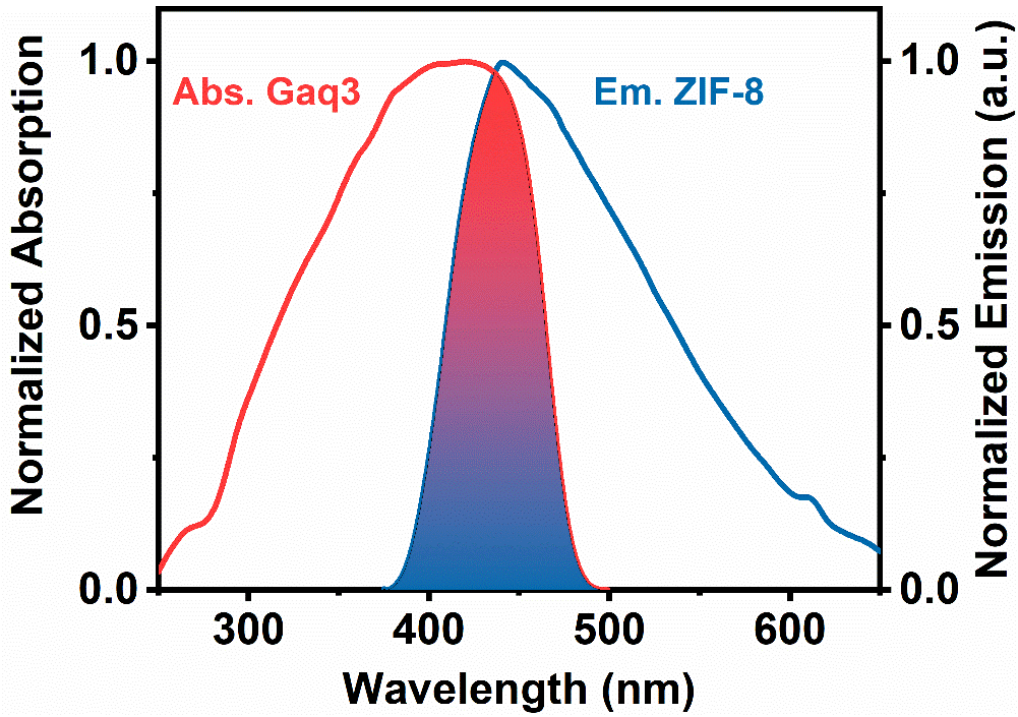

Figure S5. A) PXRD pattern of the Gaq3@ZIF-8 (0.5 mmol) right after its synthesis compared to the pattern of the same sample re-examined after 8 months. **B)** Emission spectra of the Gaq3@ZIF-8 (0.5 mmol) right after its synthesis and after 8 months recorded from the quantum yield (QY) measurements. The QY value is depicted as inset. The samples were excited at 390 nm.

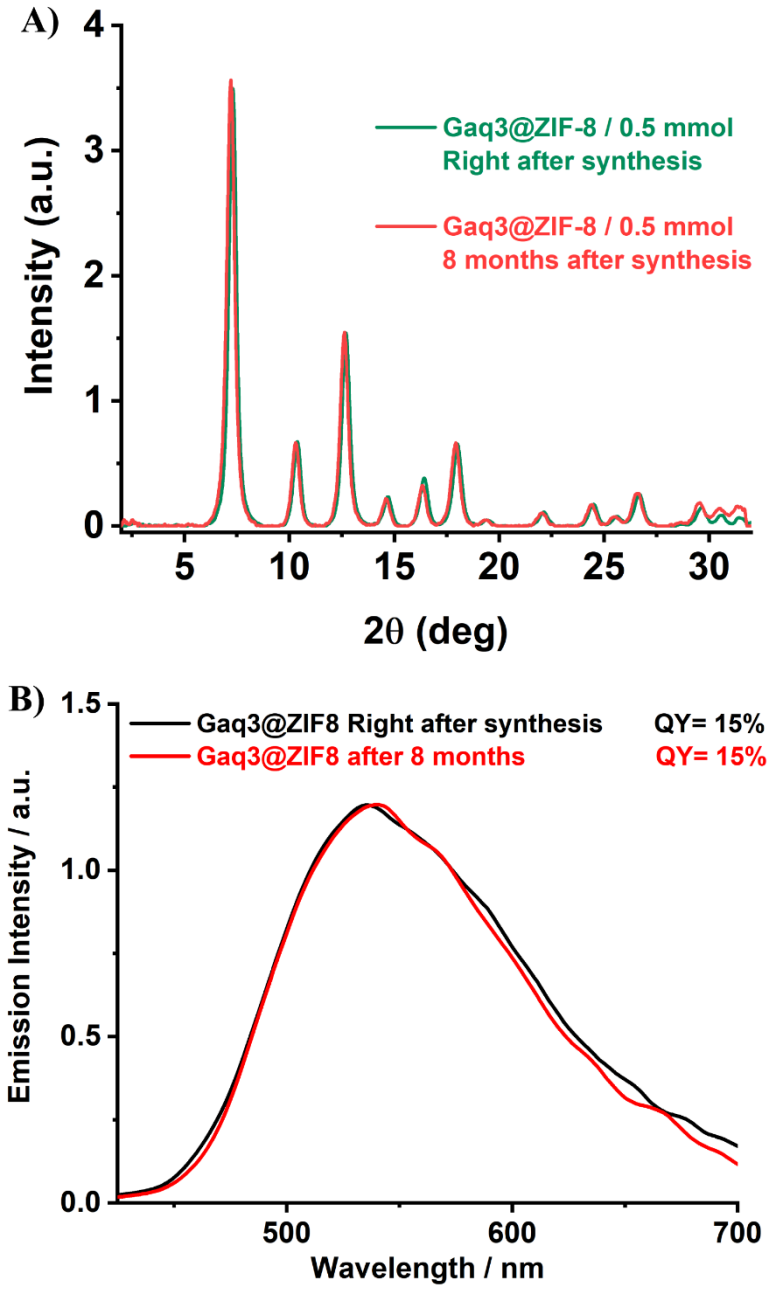

Figure S6. A) Example of the profilometer traces obtained for the emissive layers when it was scratched using a Si wafer. **B)** Deconvoluted electroluminescence spectra and their fits for all the studied devices. **C)** Comparison of the optoelectronic properties between Gaq3@ZIF8 and Gaq3@ZIF8 / CN-PPV device. From the electroluminescence spectra, the maximum wavelength (λ_{max}), maximum intensity (I_{max}), FWHM and the contributions of the two emissive species presented in the EL spectra were determined. In the case of the I-V curve, the current density (J) was compared. The dashed green square highlights that the Gaq3@ZIF8 / CN-PPV has better device performance for all the cases considered.