

Electronic Supporting Information

Efficient and stable InP quantum-dot light-emitting diodes by premixing 2-hydroxyethyl methacrylate into ZnMgO

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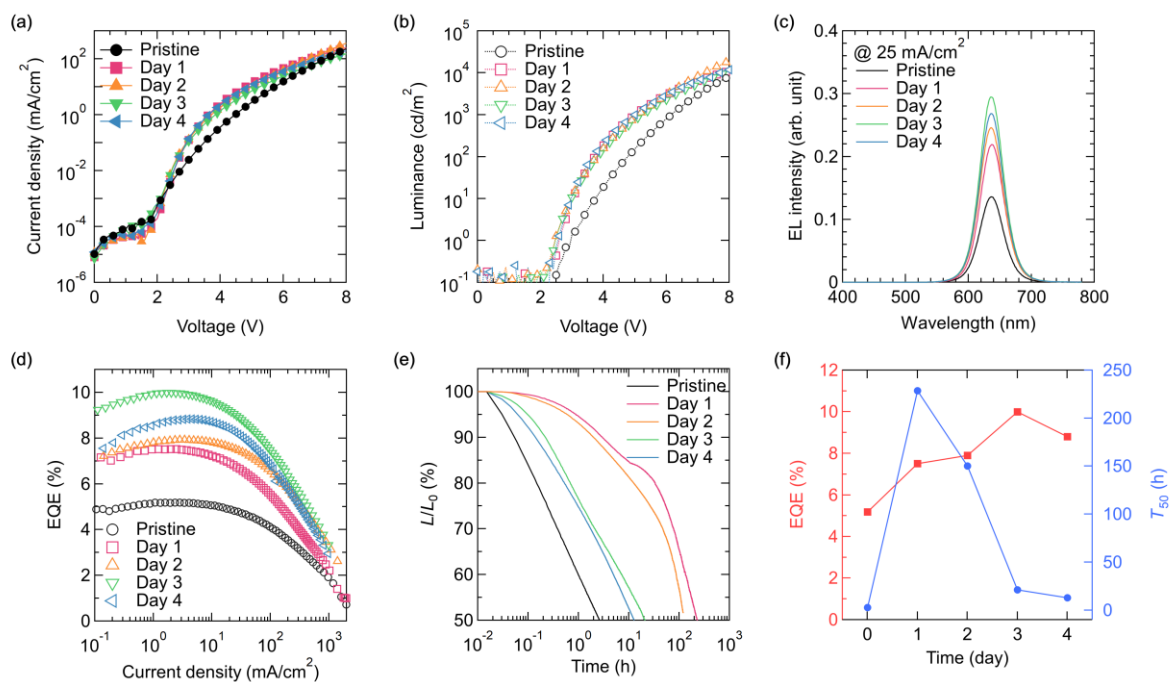


Fig. S1 (a) J - V characteristics, (b) L - V characteristics, (c) EL spectra, (d) EQE, (e) operational lifetime, and (f) summarized performance tendencies of acidic resin-treated QLEDs as a function of aging time.

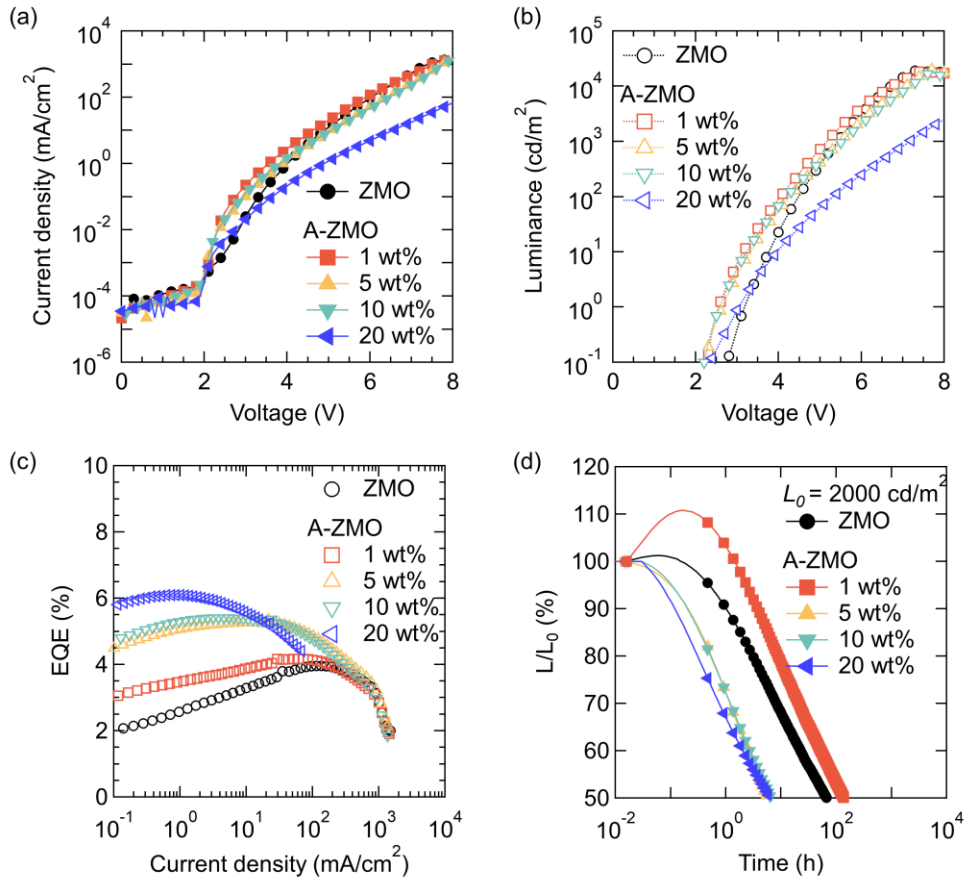


Fig. S2 (a) $J-V$ characteristics, (b) $L-V$ characteristics, (c) EQE, and (d) operational lifetime of QLEDs with ETLs of acrylic acid-premixed ZnMgO (A-ZMO) with various mixing ratios ranging from 1 to 20 wt%.

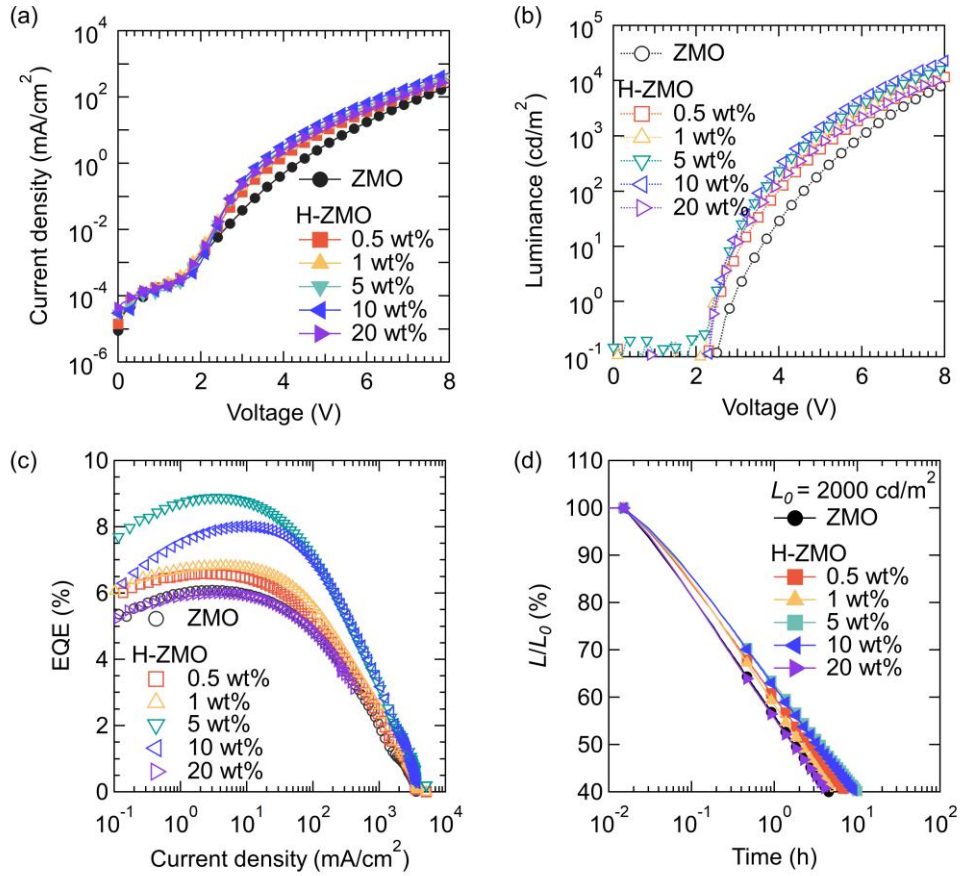


Fig. S3 (a) J - V characteristics, (b) L - V characteristics, (c) EQE, and (d) operational lifetime of QLEDs with ETLs of 2-hydroxyethyl methacrylate (HEMA)-premixed ZnMgO (H-ZMO) with various mixing ratios ranging from 0.5 to 20 wt%.

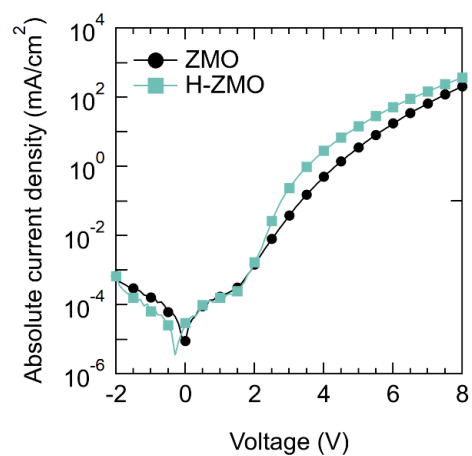


Fig. S4 J - V characteristics ranging from reverse bias of 2 V to forward bias of 8 V of QLEDs with pristine ZMO and H-ZMO, showing a saturation current density on the scale of 10^{-3} mA/cm².

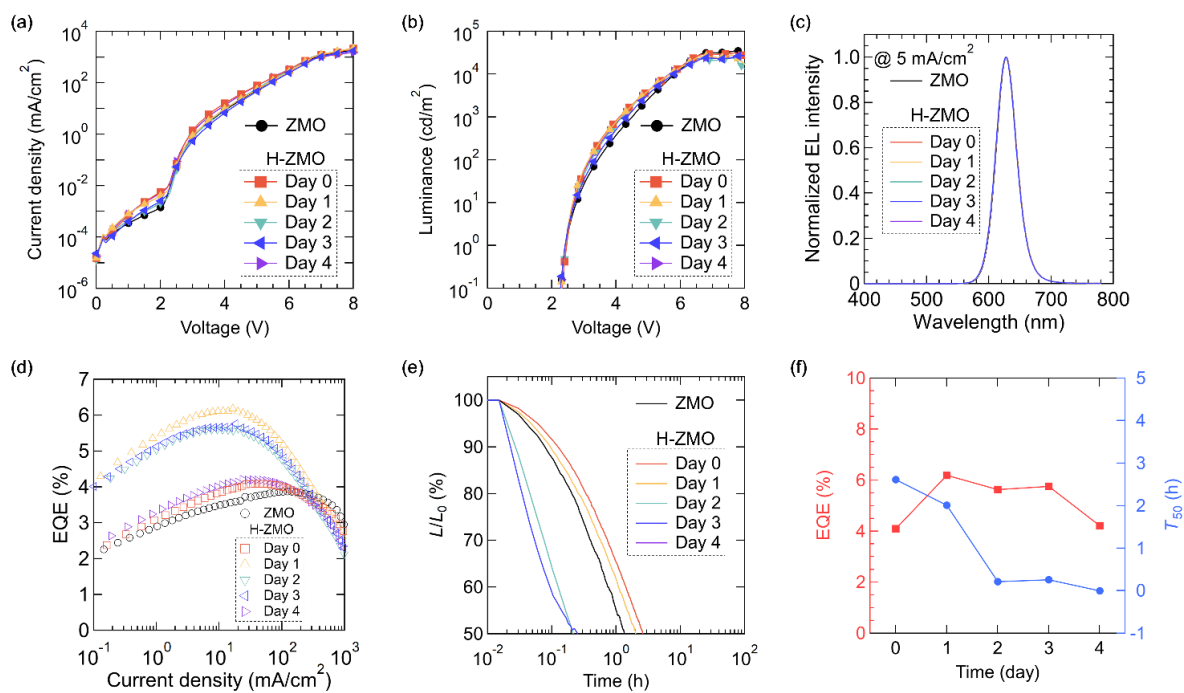


Fig. S5 (a) $J-V$ characteristics, (b) $L-V$ characteristics, (c) EL spectra, (d) EQE, (e) operational lifetime and (f) summarized performance tendencies of QLEDs with H-ZMO as a function of aging time.

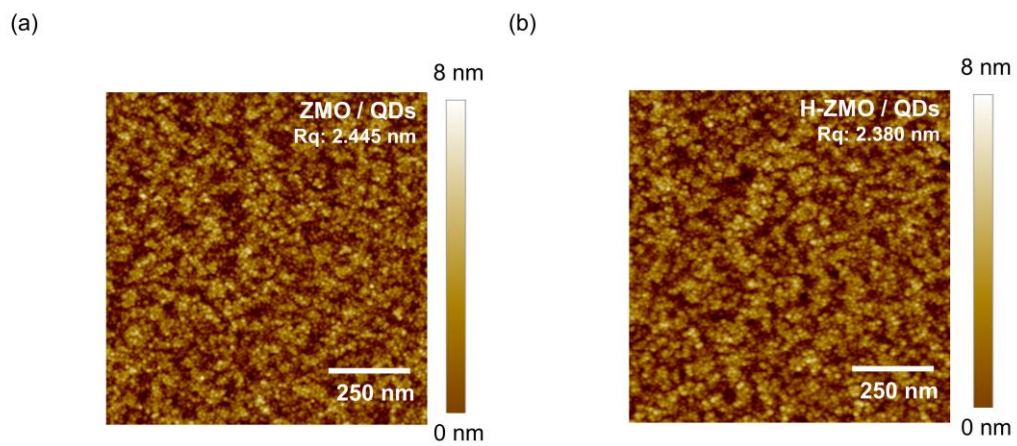


Fig. S6 Surface topography images of (a) ZMO/QDs and (b) H-ZMO/QDs films.

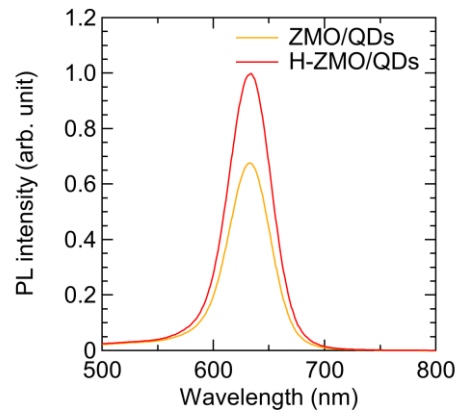


Fig. S7 PL spectra of the red InP QDs deposited on ZMO and H-ZMO films.

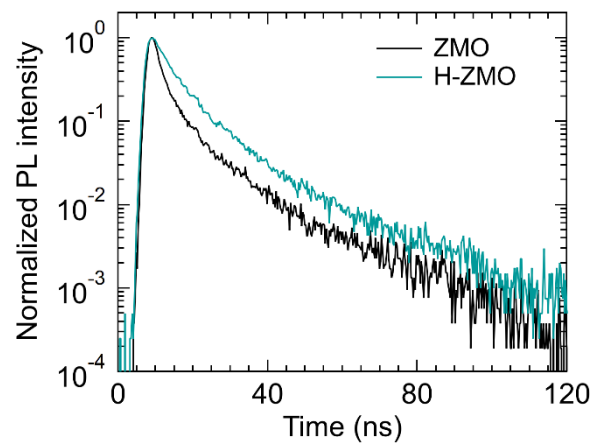


Fig. S8 Normalized time-resolved PL intensities of QDs on the pristine ZMO and H-ZMO films.

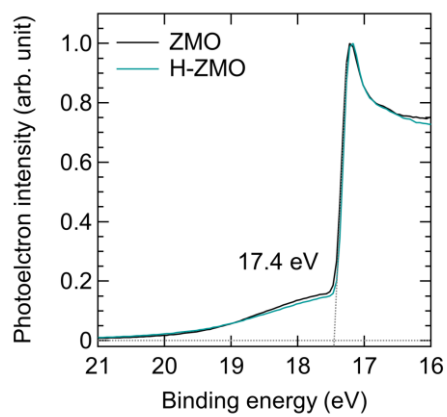


Fig. S9 Cut-off region of the UPS spectra of the ZMO and H-ZMO films.

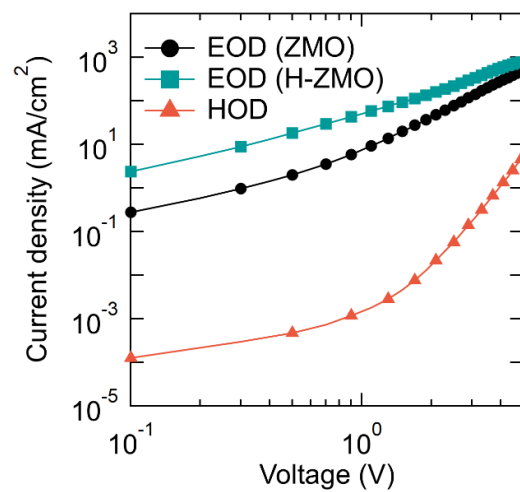


Fig. S10 J - V characteristics of EOD (ITO / ZMO or H-ZMO / QD / Al) and HOD (ITO / PEDOT:PSS / QD / TCTA / MoO₃ / Al).

Table S1. Composition and information on ingredients of UV-resin (LOCTITE 366).^(a)

Component	CAS Number	Percentage (wt%)
2-Hydroxyethyl methacrylate	868-77-9	30–35
Isobornyl methacrylate	7534-94-3	10–15
Hydroxyalkyl methacrylate	27813-02-1	1–5
Acrylic acid	79-10-7	1–2.5
Ethanone, 2,2-dimethoxy-1,2-diphenyl-	24650-42-8	1-2.5
Cumene hydroperoxide	80-15-9	0.25–1
Methacrylic acid	79-41-4	< 1
1-Acetyl-2-phenylhydrazine	114-83-0	0.1–1
2-Propenoic acid, 2-methyl-, 2-(2-hydroxyethoxy)ethyl ester	2351-43-1	< 1

^(a) All data were obtained from the safety data sheet of LOCTITE AA 366.