Supporting Information

Deep-red and near-infrared light-emitting electrochemical cells employing perovskite color conversion layers with EQE >10%

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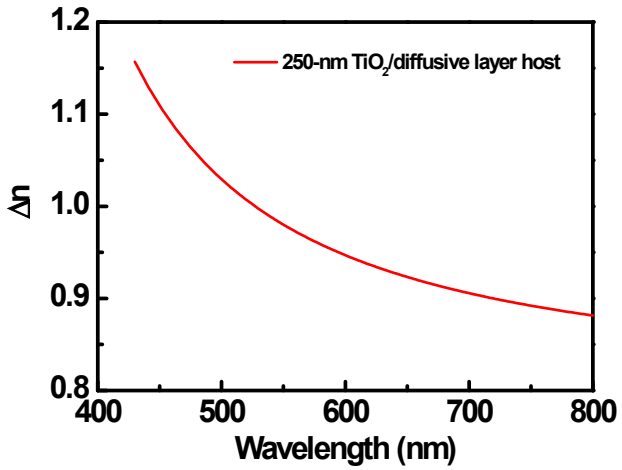

Fig. S1 Refractive index difference between 250-nm TiO_2 NPs and the diffusive layer host.

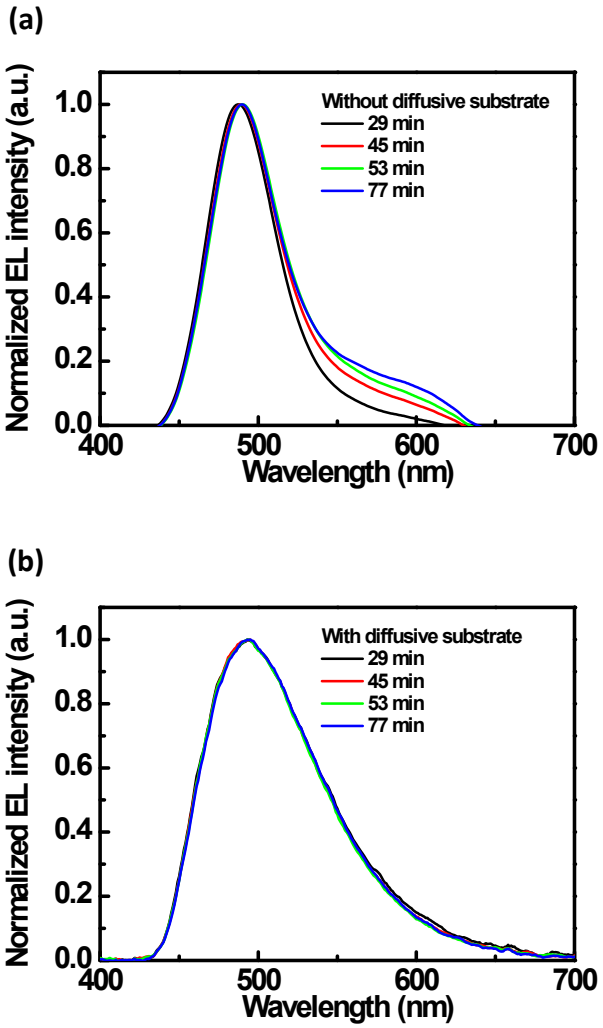

Fig. S2 Time-dependent EL spectra for the LECs based on complex **1** (a) without and (b) with the diffusive substrates under a constant current (0.05 μA).

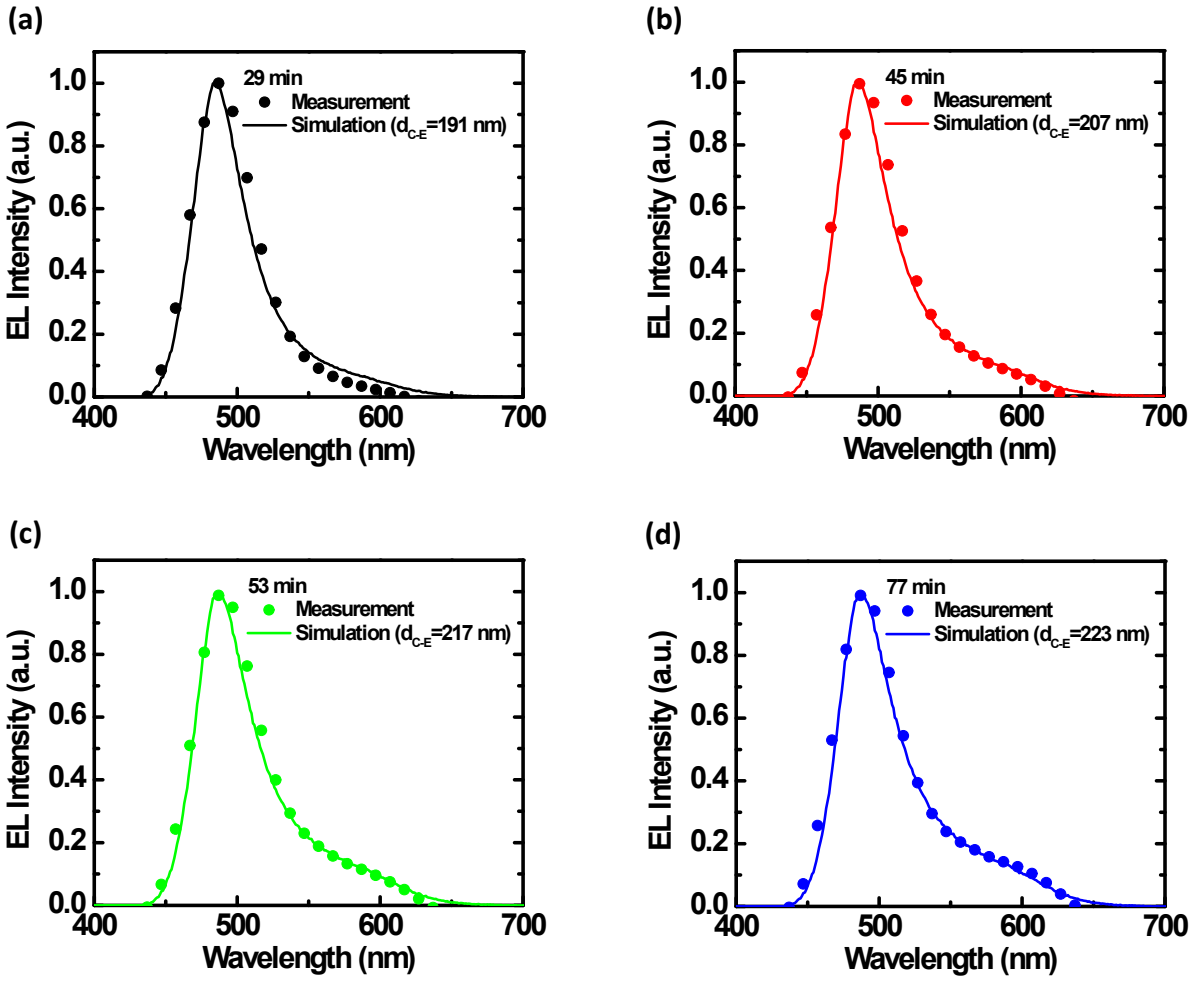

Fig. S3 Simulated (line) and measured (solid symbol) EL spectra of the LECs based on complex **1** without the diffusive substrates under a constant current (0.05 μA) at (a) 29, (b) 45, (c) 53, and (d) 77 min after the device driving started. The emissive-layer thickness is 530 nm and the emission zone position from cathode (d_{C-E}) employed for simulation is labeled on each subfigure.

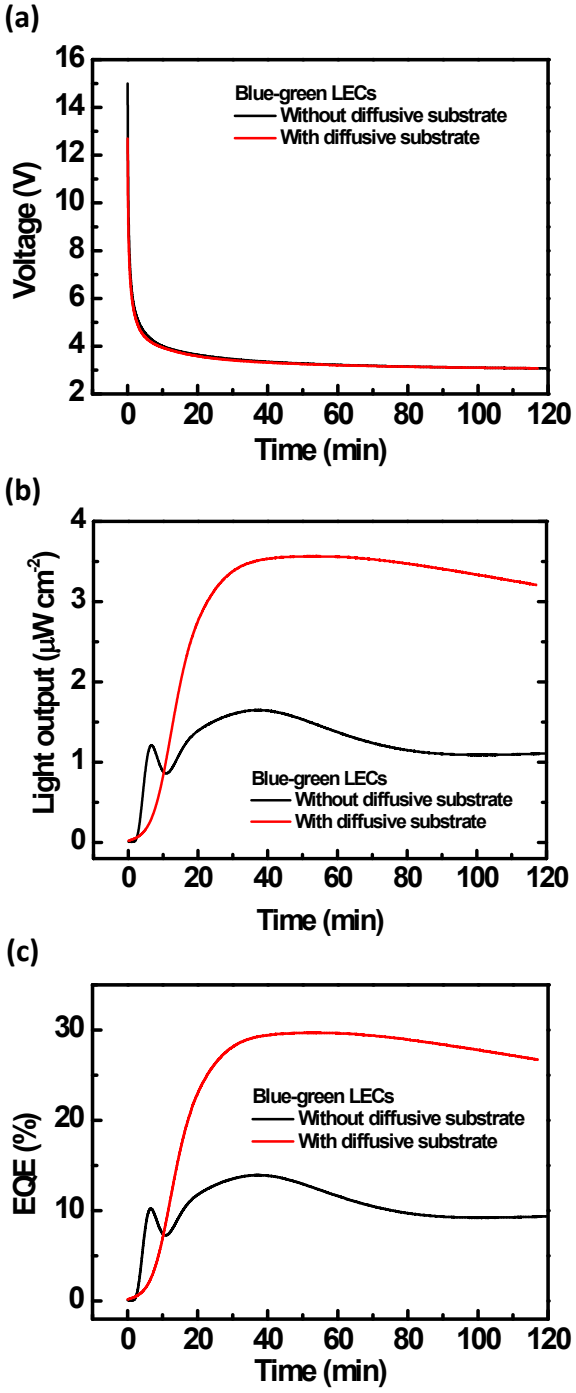

Fig. S4 Time-dependent (a) voltage, (b) light output, and (c) EQE of the LECs based on complex **1** without and with the diffusive substrates under a constant current (0.05 μA).

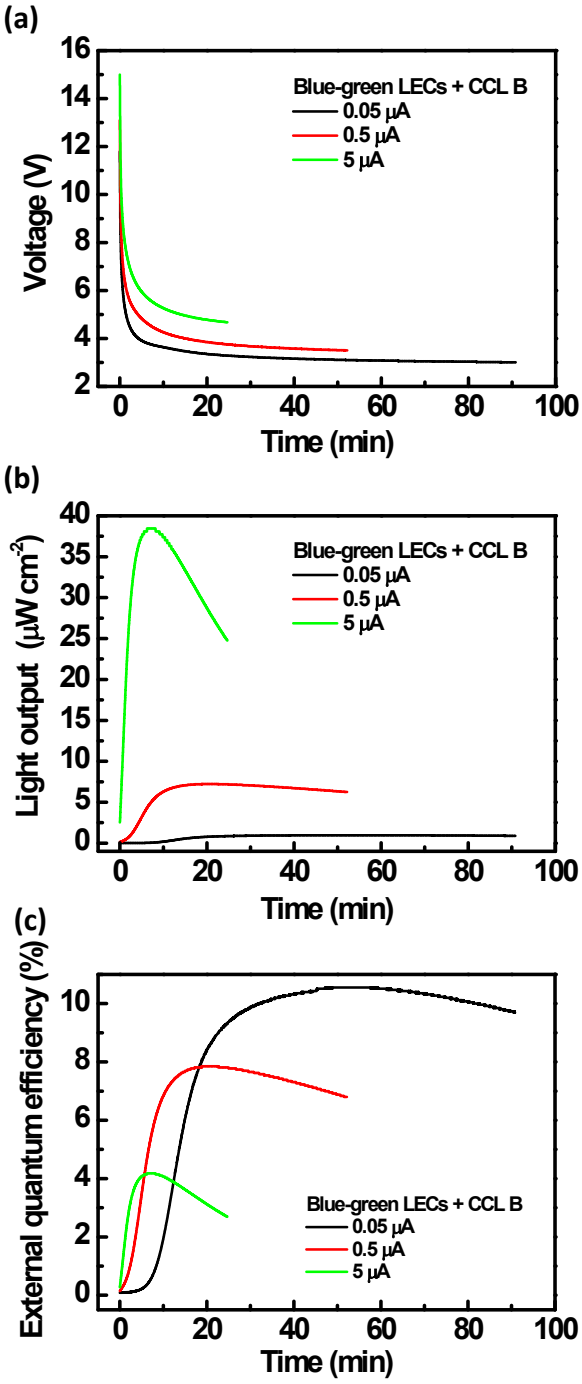

Fig. S5 Time-dependent (a) voltage, (b) light output, and (c) EQE of the blue-green LECs integrated with perovskite CCL **B** under constant currents (0.05, 0.5, and 5 μA).

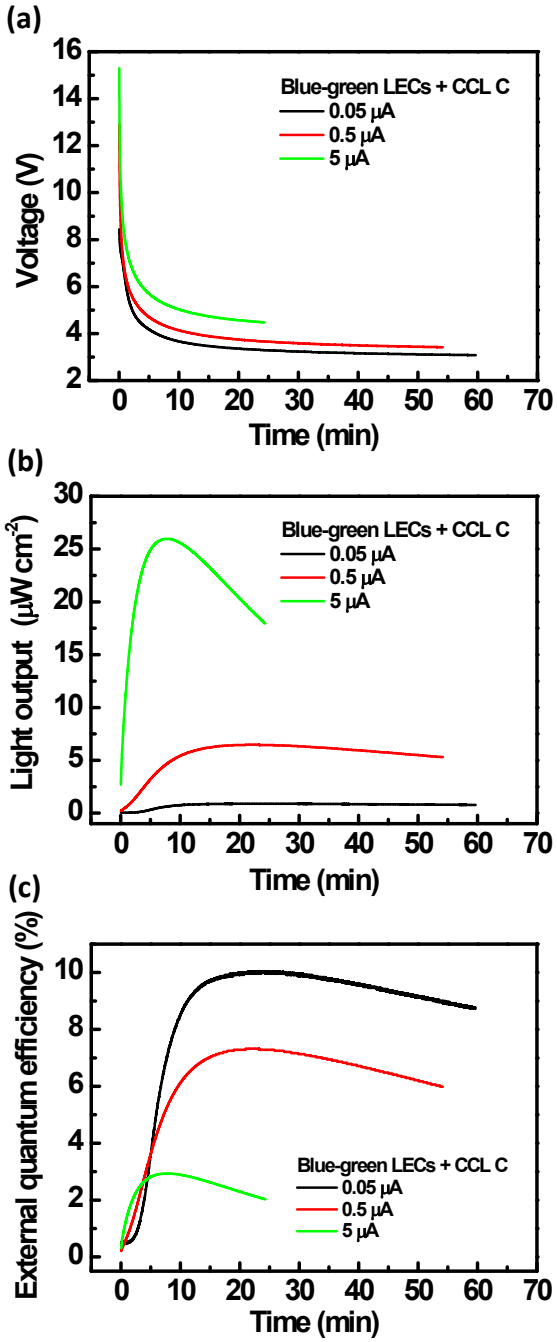

Fig. S6 Time-dependent (a) voltage, (b) light output, and (c) EQE of the blue-green LECs integrated with perovskite CCL **C** under constant currents (0.05, 0.5, and 5 μA).