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Thermally Resistant UV-Curable Epoxy-Siloxane Hybrid Materials for Light Emitting Diode (LED) Encapsulation

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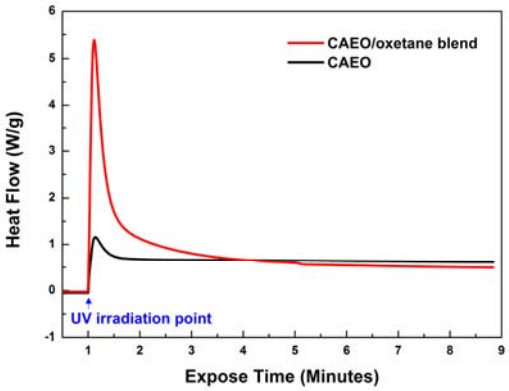

Fig. S1 Photo DSC exothermic curves of CAEO/oxetane blend and CAEO. The CAEO/oxetane blend showed faster photo-cationic polymerization behavior compared to that of the CAEO.

The Photo DSC of the CAEO/oxetane blend was measured to verify faster photo-cationic polymerization behavior of the blend compared to that of the CAEO. (**Fig. S1**) The CAEO has very small exothermic energy (14.33 J/g) in the early stage of irradiation, thereby lasting for a long period of irradiation during photo-cationic polymerization. In the case of the CAEO/oxetane blend, the exothermic energy (114.3J/g) in the early stage of irradiation was much larger than that of the CAEO. This indicates faster photo-cationic polymerization of the CAEO/oxetane blend than that of the CAEO. This is due to the cross-linking effects of the

oxetane monomer with low molecular weight as well as the high mobility of the cyclo-aliphatic epoxy groups resulting from lower viscosity of the CAEO/oxetane blend (2730 mPa·s at 25 ℃) compared to that of the CAEO (43750 mPa·s at 25 ℃).

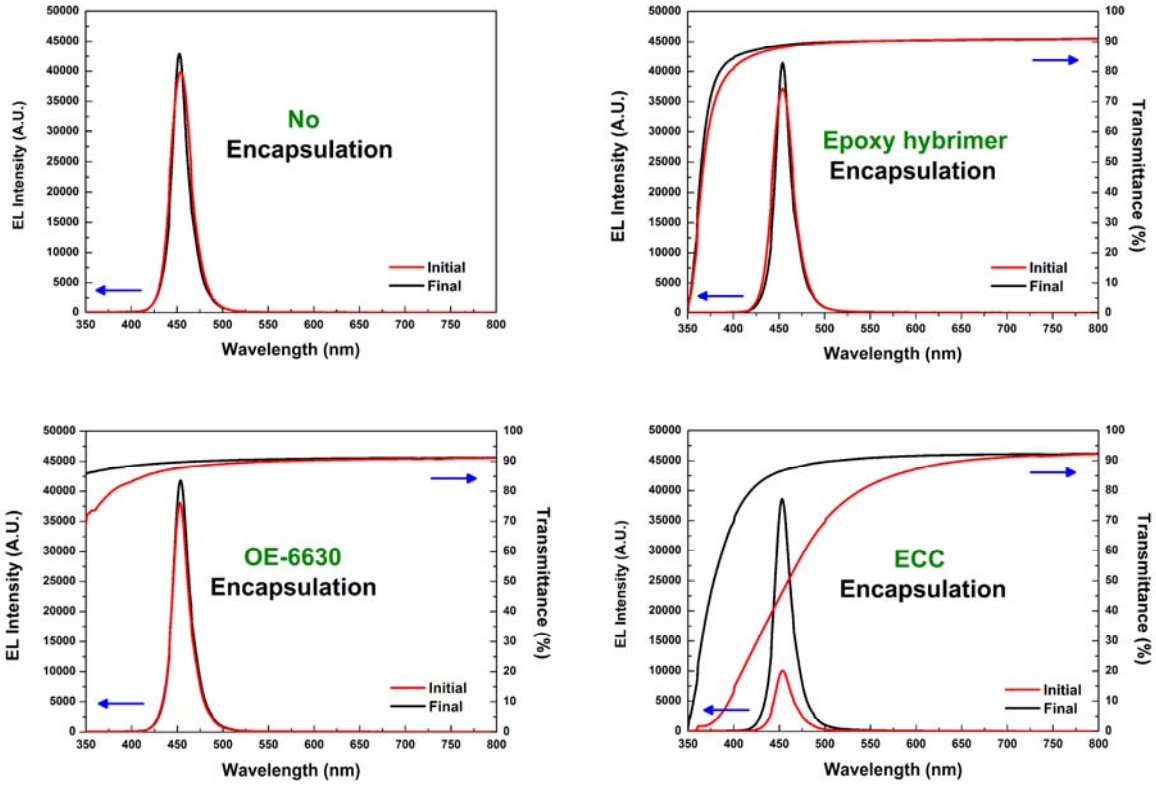

Fig. S2 EL spectra of the blue LED encapsulated by UV-curable epoxy hybrimer, OE-6630, and ECC before/after thermal aging at 120℃ for 1008 hours in air.

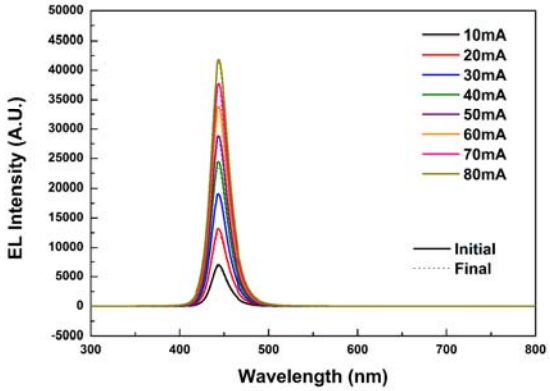

Fig. S3 EL spectra of the blue LED encapsulated by UV-curable epoxy hybrimer as a function of applied current before/after blue light aging for 24 hours.