Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting Information

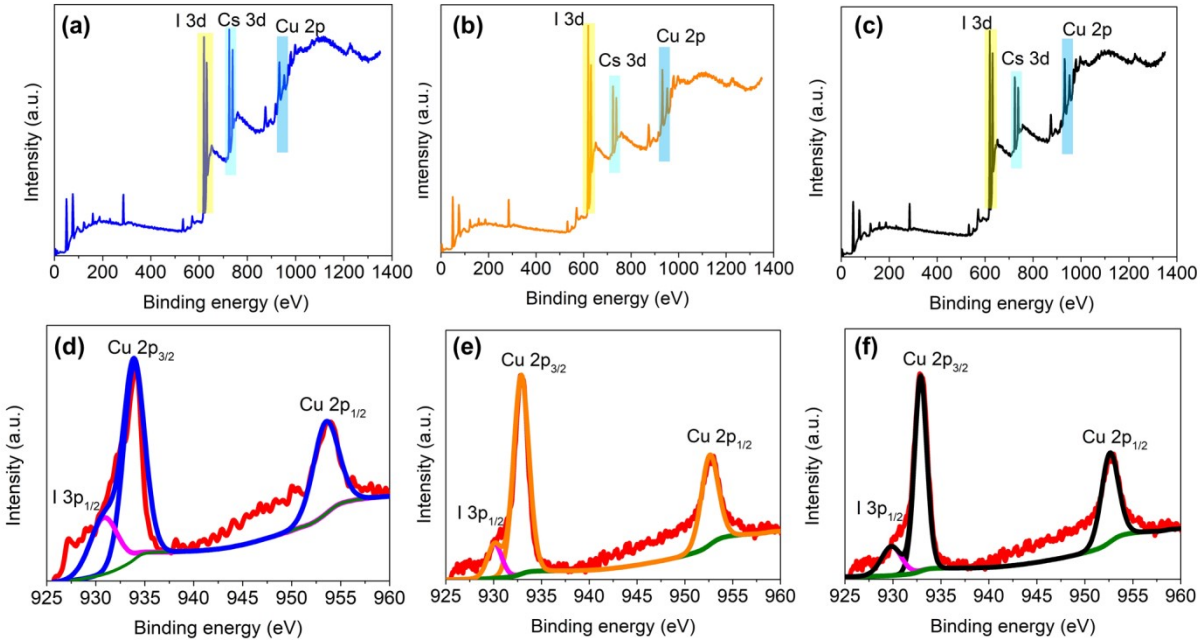

Figure S1. XPS survey spectra of (a) $Cs_3Cu_2I_5$ and (b) $CsCu_2I_3$ and (c) $Cs_3Cu_2I_5$@$CsCu_2I_3$ composites. Cu 2p region of the XPS spectra of (d) $Cs_3Cu_2I_5$ and (e) $CsCu_2I_3$ and (f) $Cs_3Cu_2I_5$@$CsCu_2I_3$ composites.

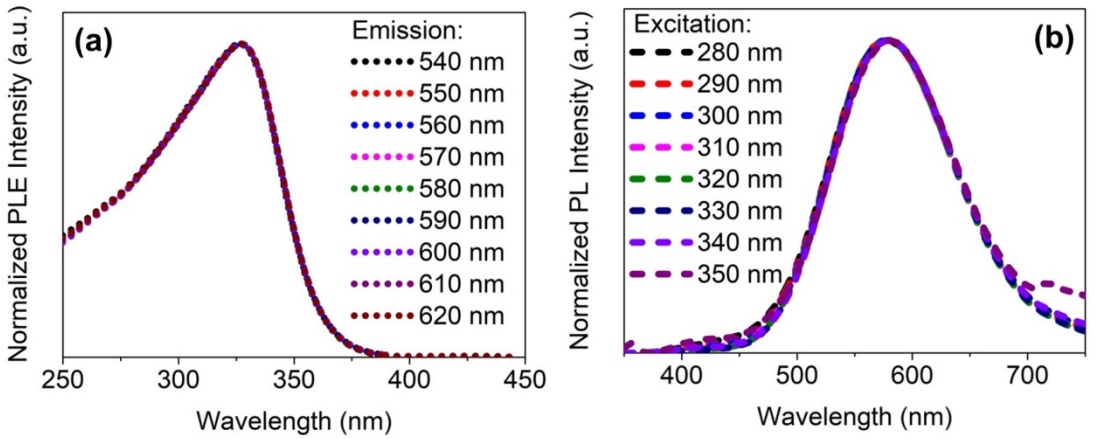

Figure S2. (a) PLE spectra of $CsCu_2I_3$ measured at different emission wavelengths. (b) PL spectra of $CsCu_2I_3$ measured at different excitation wavelengths.

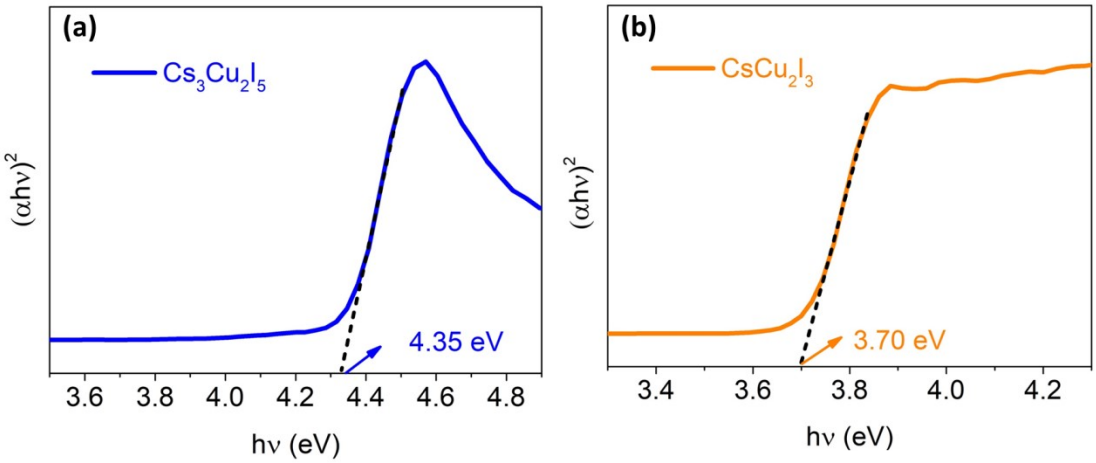

Figure S3. Band gaps of (a) $Cs_3Cu_2I_5$ and (b) $CsCu_2I_3$ evaluated from the absorption spectra in Figure 3a, using the equation of $(\alpha h\nu)^2 = \alpha(h\nu - Eg)$, where $h\nu$ is the photon energy, α is the absorption coefficient, and Eg is the band gap.

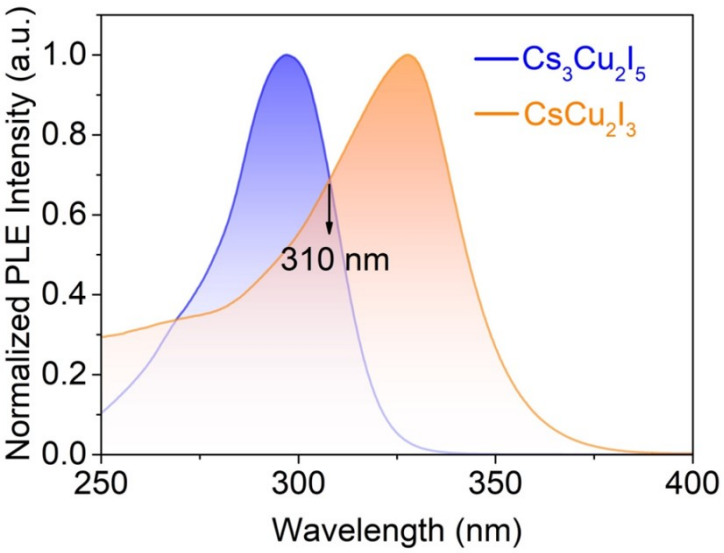

Figure S4. PLE spectra of $Cs_3Cu_2I_5$ and $CsCu_2I_3$.

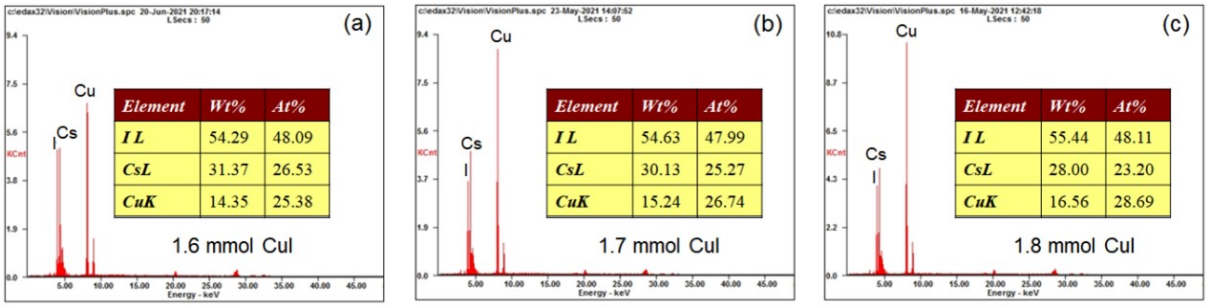

Figure S5. XRF spectra of $CsCu_2I_3$@$Cs_3Cu_2I_5$ composites synthesized with 1.6, 1.7 and 1.8 mmol of CuI, respectively.

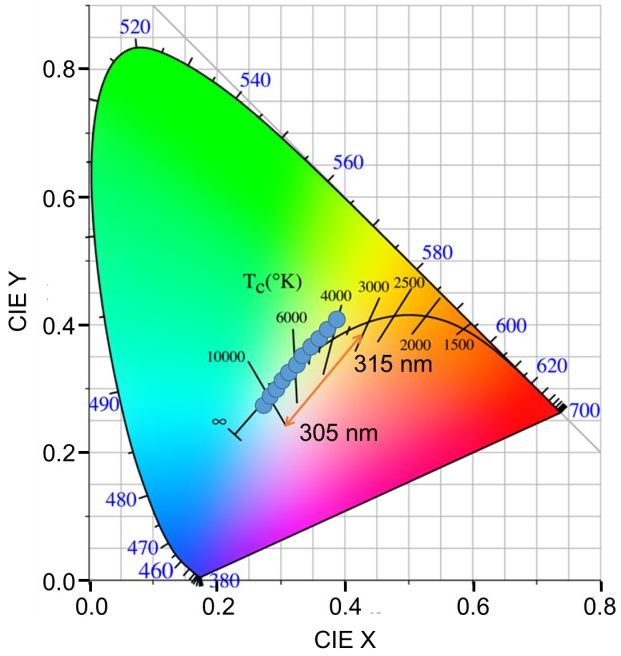

Figure S6. CIE color coordinates of the $Cs_3Cu_2I_5$@$CsCu_2I_3$ composite with 1.7 mmol of CuI, obtained using the excitation wavelengths ranging from 305 to 315 nm.

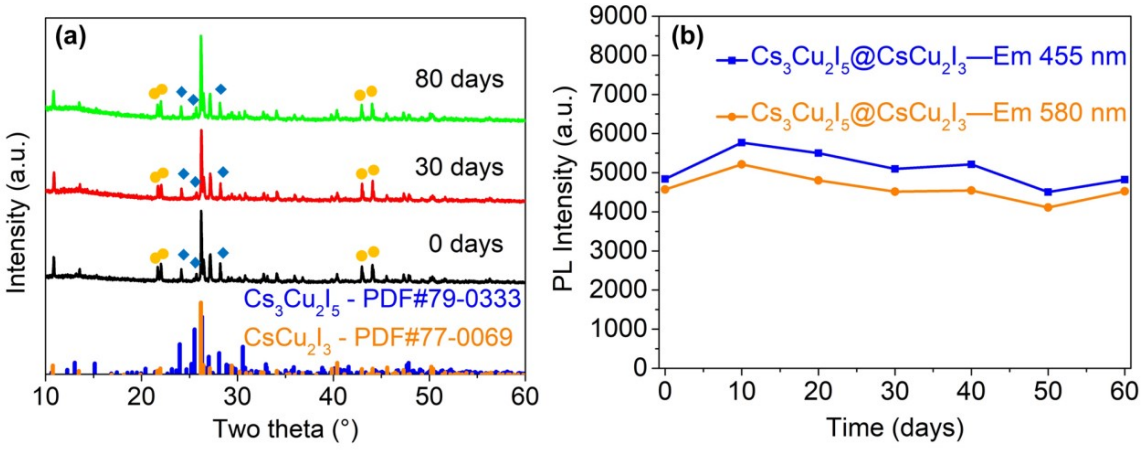

Figure S7. (a) Comparison of XRD patterns of the $CsCu_2I_3@Cs_3Cu_2I_5$ composite synthesized with 1.6 mmol of CuI, after storage for 0, 30 and 80 days in ambient air. (b) PL stability of the $CsCu_2I_3@Cs_3Cu_2I_5$ composite in ambient air.

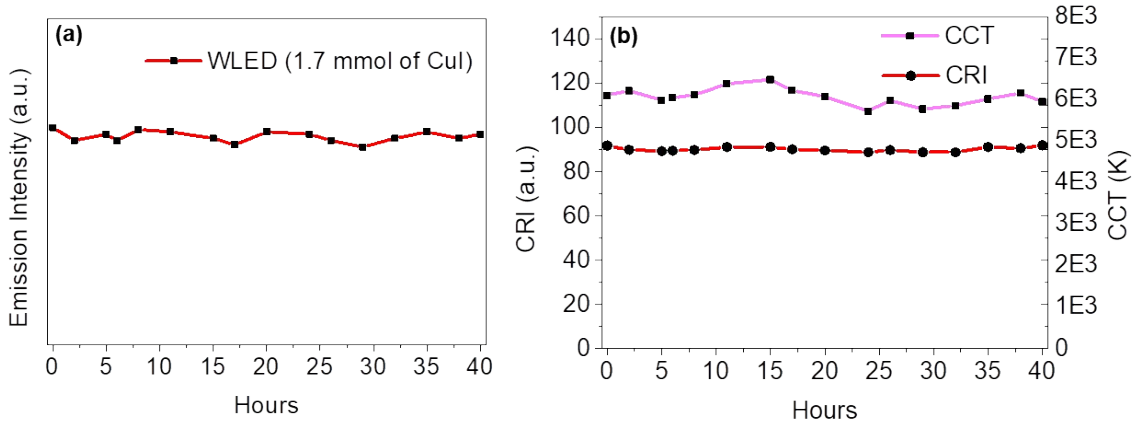

Figure S8. (a) the stability of WLED (1.7 mmol of CuI) under operated at voltage of 5 V. (b) CRI and CCT of the WLED as functions of running time in ambient air.

Table S1. The estimated molar contents of $Cs_3Cu_2I_5$ and $CuCu_2I_3$ in the composites according to XRF results.

Samples	$Cs_3Cu_2I_5$	$CsCu_2I_3$
1.6 mmol	54.5%	45.5%
1.7 mmol	44.5%	55.5%
1.8 mmol	37.9%	62.1%