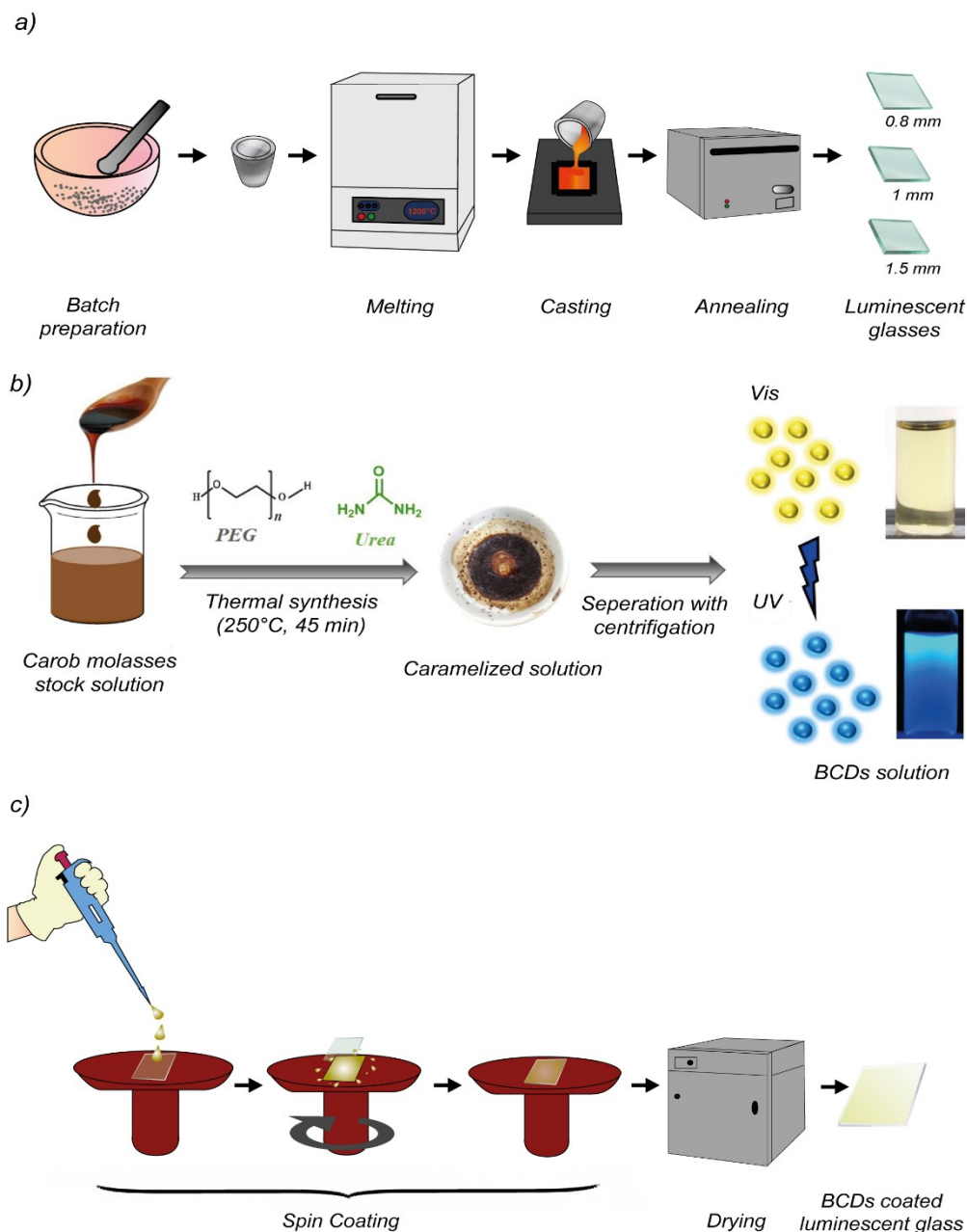
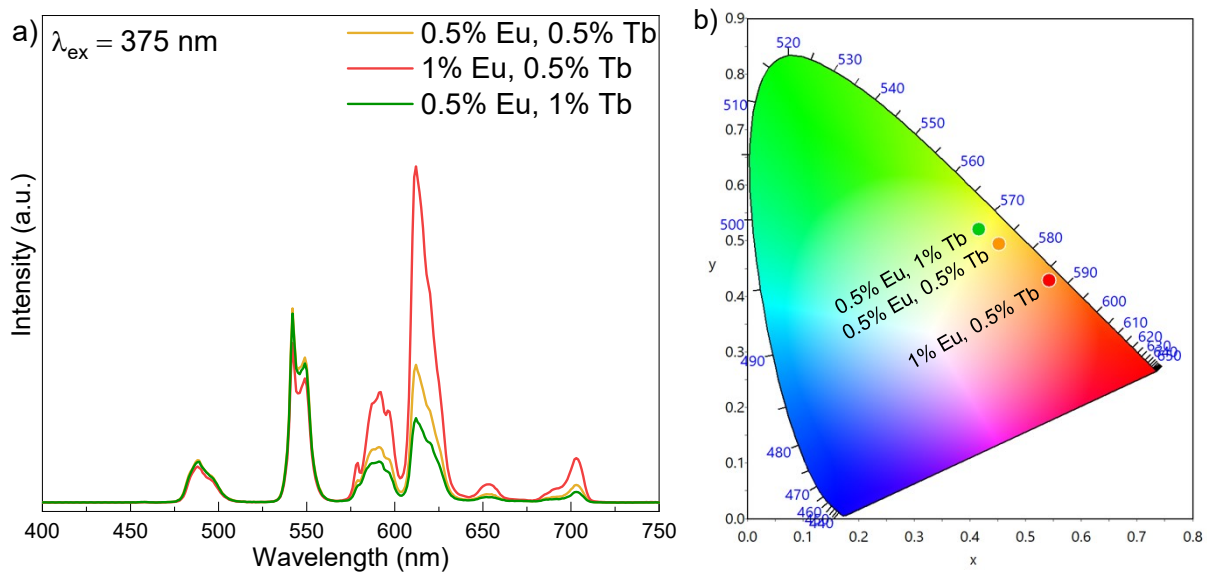


Supplementary Material

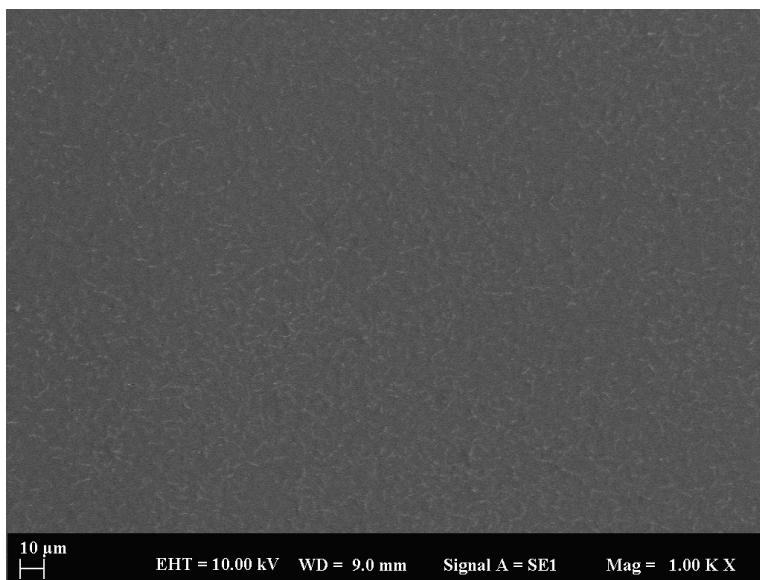
**The Coupling of Blue Emitting Carbon Dots with  $\text{Eu}^{3+}/\text{Tb}^{3+}$  Co-Doped Luminescent Glasses for Utilization in White-Light Emitting Diodes**



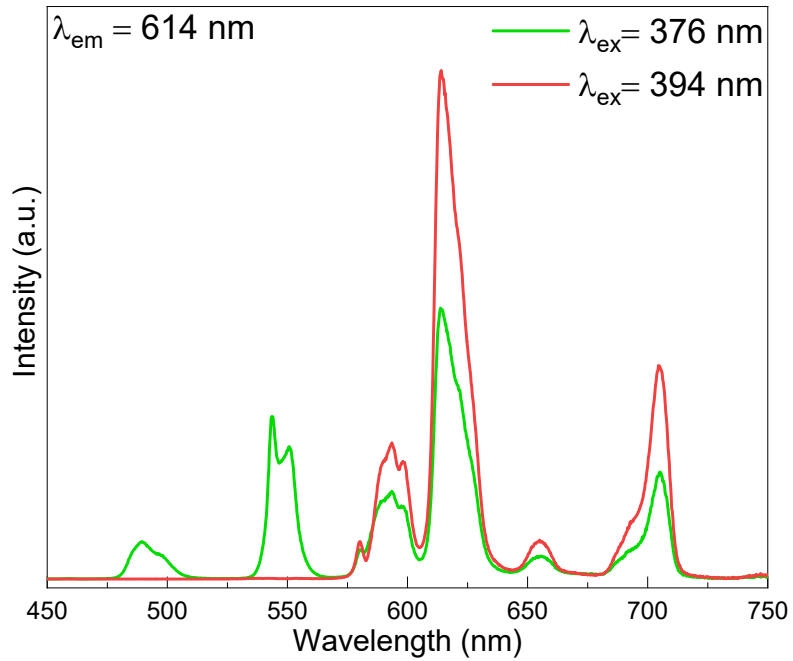
**Fig. S1** Schematic representation of (a) the manufacturing procedure for  $\text{Eu}^{3+}/\text{Tb}^{3+}$  co-doped luminescent glasses with different thickness values, (b) the synthesis of BCDs via hydrothermal route, and (c) the spin-coating of BCDs on luminescent glasses.



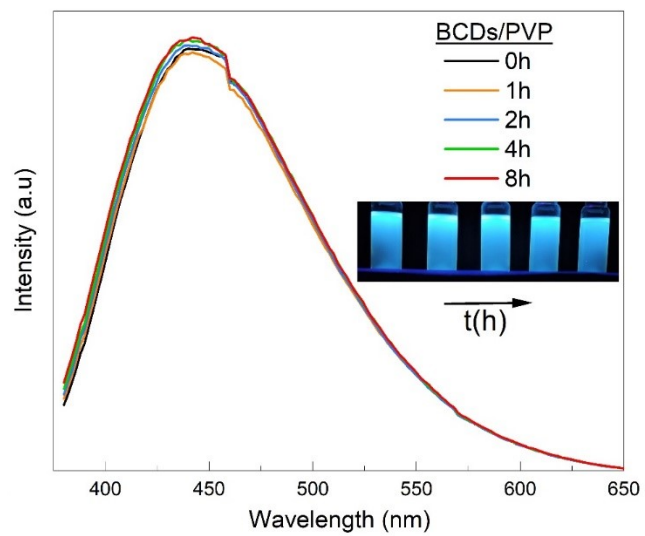
**Fig. S2** (a) Photoluminescence spectrum and (b) corresponding CIE chromaticity diagram for different amounts of  $\text{Eu}^{3+}/\text{Tb}^{3+}$  co-doped luminescent glasses under 375 nm excitation wavelength.



**Fig. S3** SEM image of a selected luminescent glass sample coated with BCD/PVP solution (LG1.5-7L) demonstrating the homogenous nature of coating layer.



**Fig. S4** The overlapping spectra of selected LG0.8 luminescent glass sample recorded on hypersensitive excitation wavelengths for Tb<sup>3+</sup> (376 nm) and Eu<sup>3+</sup> (394 nm) by monitoring 614 nm emission proving the energy transfer from Tb<sup>3+</sup> to Eu<sup>3+</sup>.



**Fig. S5** The PL emission spectra of BCD/PVP solution under 375 nm UV irradiation as a function of time (inset photograph displays the time-dependent photobleaching behavior).

**Table S1** Colorimetric properties for uncoated and BCD-coated glass samples under 375 nm excitation.

<b>Sample Code</b>	<b>CIE Coordinates (x,y)</b>	<b>CCT (K)</b>	<b>CRI (Ra)</b>	<b>Purity (%)</b>
LG0.8	0.5287, 0.4408	2152	86	91.1
LG0.8-1L	0.3821, 0.3958	3628	88	44.3
LG0.8-3L	0.3299, 0.3421	4684	92	15.2
LG1	0.5291, 0.4438	2167	85	92.1
LG1-1L	0.4283, 0.4498	3191	82	70
LG1-3L	0.4062, 0.4376	3470	82	61.2
LG1-5L	0.3480, 0.3563	4187	91	24.4
LG1.5	0.5091, 0.4570	2440	83	90
LG1.5-1L	0.4537, 0.4783	3264	75	79.8
LG1.5-3L	0.4525, 0.4729	3247	76	77.9
LG1.5-5L	0.4530, 0.4760	3260	75	78.9
LG1.5-7L	0.4523, 0.4713	3240	77	77.3

**Table S2** Comparison of the CIE color coordinates, CCT, CRI, color purity, and PLQY values of optimal BCD-coated  $\text{Eu}^{3+}/\text{Tb}^{3+}$  co-doped luminescent glasses with some reported studies on  $\text{Eu}^{3+}/\text{Tb}^{3+}$  doped glasses and glass-ceramics for white light generation along with commercial WLEDs

Sample Name	$\lambda_{\text{ex}}$ (nm)	CIE Coordinates (x, y)	CCT (K)	CRI ( $R_a$ )	Purity (%)	PLQY (%)	Reference
$\text{Eu}^{3+}/\text{Tb}^{3+}$ doped glass	380	0.325, 0.321					[24]
$\text{Eu}^{3+}/\text{Tb}^{3+}$ doped glass	385	0.36, 0.35					[71]
$\text{Eu}^{3+}/\text{Tb}^{3+}$ doped glass	365	0.3382, 0.2763	5010				[72]
$\text{Eu}^{2+,3+}/\text{Tb}^{3+}$ doped glass	380	0.325, 0.321				39.51	[23]
$\text{Eu}^{3+}/\text{Tb}^{3+}$ doped $\text{CsPbBr}_3$ QD glass	450	0.3335, 0.3413	4945	86			[2]
$\text{Ce}^{3+}/\text{Eu}^{3+}/\text{Tb}^{3+}$ doped glass	380	0.329, 0.327	5661				[28]
$\text{Ce}^{3+}/\text{Eu}^{3+}/\text{Tb}^{3+}$ doped glass	375	0.333, 0.353	5502				[29]
$\text{Tm}^{3+}/\text{Eu}^{3+}/\text{Tb}^{3+}$ doped glass	360	0.336, 0.329					[30]
CD Phosphors	450	0.34, 0.31	5048	82		30-40	[73]
Commercial WLED ( $\text{YAG}:\text{Ce}^{3+}$ )	450	0.33, 0.33	>6000	<70			[74]
LG0.8-3L	375	0.3299, 0.3421	4683	92	15.3	55.58	Present Work
LG1-5L	375	0.3480, 0.3563	4186	91	24.4	48.22	Present Work