UV-A and UV-B excitation region broadened novel green coloremitting CaGd₂ZnO₅: Tb³⁺ nanophosphors

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Fig. S1: (a) PLE and (b) PL spectra of CGZO host lattice.

Figure S1. Shows the PLE and PL spectra of CGZO host lattice which exhibited the broad excitation and emission bands due to the surface states and oxygen deficiency related defects.

Supporting Information

<u>CIE chromaticity coordinates calculations:</u>

The 1931 CIE (x, y) chromaticity coordinates are calculated from the spectral power distribution (SPD) of the light source and the CIE color-matching functions (Figure S2). The numerical values of these color-matching functions are tabulated in Table S1.

The \overline{X} , \overline{Y} , \overline{Z} color-matching functions give the tristimulus value X, Y and Z: $X=\int p\overline{x} d\lambda$, $Y=\int p\overline{y} d\lambda$, $Z=\int p\overline{z} d\lambda$,

where p is the SPD of the light source. From X, Y and Z, the chromaticity coordinates x, y, z can be obtained as follows:



Fig. S2: CIE color matching functions

Supporting Information

λ/nm	Spectral tristimulus				
	values				
	$\overline{\mathbf{x}}(\lambda)$	$\overline{y}(\lambda)$	$\overline{Z}(\lambda)$		
	red	green	blue		
380	0.0014	0.0000	0.0065		
385	0.0022	0.0001	0.0105		
390	0.0042	0.0001	0.0201		
395	0.0076	0.0002	0.0362		
400	0.0143	0.0004	0.0679		
405	0.0232	0.0006	0.1102		
410	0.0435	0.0012	0.2074		
415	0.0776	0.0022	0.3713		
420	0.1344	0.0040	0.6456		
425	0.2148	0.0073	1.0391		
430	0.2839	0.0116	1.3856		
435	0.3285	0.0168	1.6230		
440	0.3483	0.0230	1.7471		
445	0.3481	0.0298	1.7826		
450	0.3362	0.0380	1.7721		
455	0.3187	0.0480	1.7441		
460	0.2908	0.0600	1.6692		
465	0.2511	0.0739	1.5281		
470	0.1954	0.0910	1.2876		
475	0.1421	0.1126	1.0419		

Table S1: CIE 1931 two-degree color-matching functions

Supporting Information

485 0.0580 0.1693 0.6162 490 0.0320 0.2080 0.4652 495 0.0147 0.2586 0.3533 500 0.0049 0.3230 0.2720 505 0.0024 0.4073 0.2123 510 0.0093 0.5030 0.1582 515 0.0291 0.6082 0.1117 520 0.0633 0.7100 0.0782 515 0.2257 0.9149 0.0293 530 0.1655 0.8620 0.0422 535 0.2257 0.9149 0.0293 540 0.2904 0.9540 0.0203 540 0.2904 0.9540 0.0023 545 0.3597 0.9803 0.0134 550 0.4334 0.9950 0.0083 555 0.5121 1.0000 0.0023 560 0.5945 0.9950 0.0033 565 0.6784 0.9786 0.0023 575
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590 1.0263 0.7570 0.001
595 1.0567 0.6949 0.0010
600 1.0622 0.6310 0.0008
605 1.0456 0.5668 0.000
610 1.0026 0.5030 0.0003
615 0.9384 0.4412 0.0002

Supporting Information

620	0.8544	0.3810	0.0002
625	0.7514	0.3210	0.0001
630	0.6424	0.2650	0.0000
635	0.5419	0.2170	0.0000
640	0.4479	0.1750	0.0000
645	0.3608	0.1382	0.0000
650	0.2835	0.1070	0.0000
655	0.2187	0.0816	0.0000
660	0.1649	0.0610	0.0000
665	0.1212	0.0446	0.0000
670	0.0874	0.0320	0.0000
675	0.0636	0.0232	0.0000
680	0.0468	0.0170	0.0000
685	0.0329	0.0119	0.0000
690	0.0227	0.0082	0.0000
695	0.0158	0.0057	0.0000
700	0.0114	0.0041	0.0000
705	0.0081	0.0029	0.0000
750	0.0003	0.0001	0.0000
755	0.0002	0.0001	0.0000
760	0.0002	0.0001	0.0000
765	0.0001	0.0000	0.0000
770	0.0001	0.0000	0.0000
775	0.0001	0.0000	0.0000
780	0.0000	0.0000	0.0000
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