

COMMUNICATION

Enable Low-Amount YAG:Ce³⁺ to Convert into White Light with Plasmonic Au Nanoparticles

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Supplementary Information



Figure S1 SEM image of 21 nm Au nanoparticles.

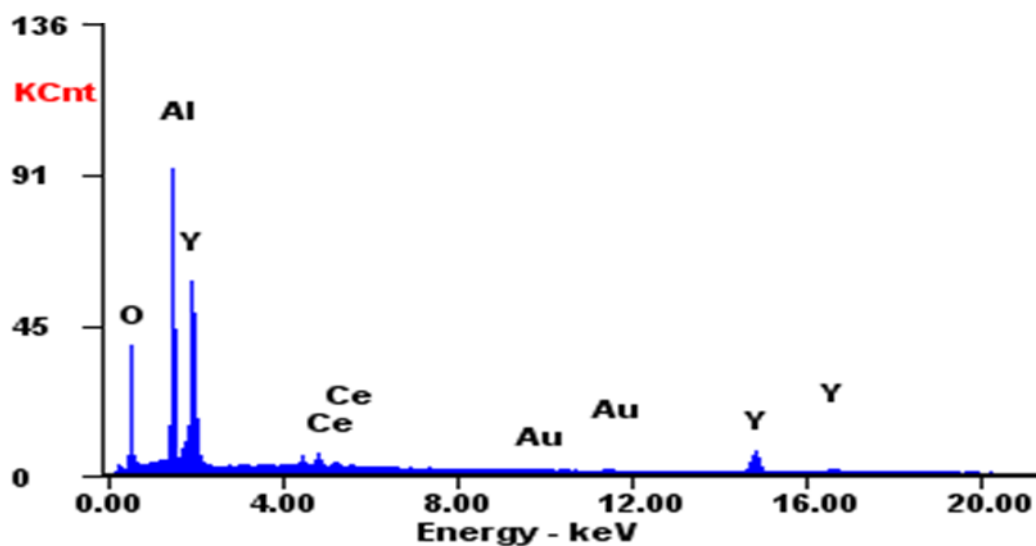


Figure. S2 EDX of YAG:Ce³⁺/Au nanoparticles

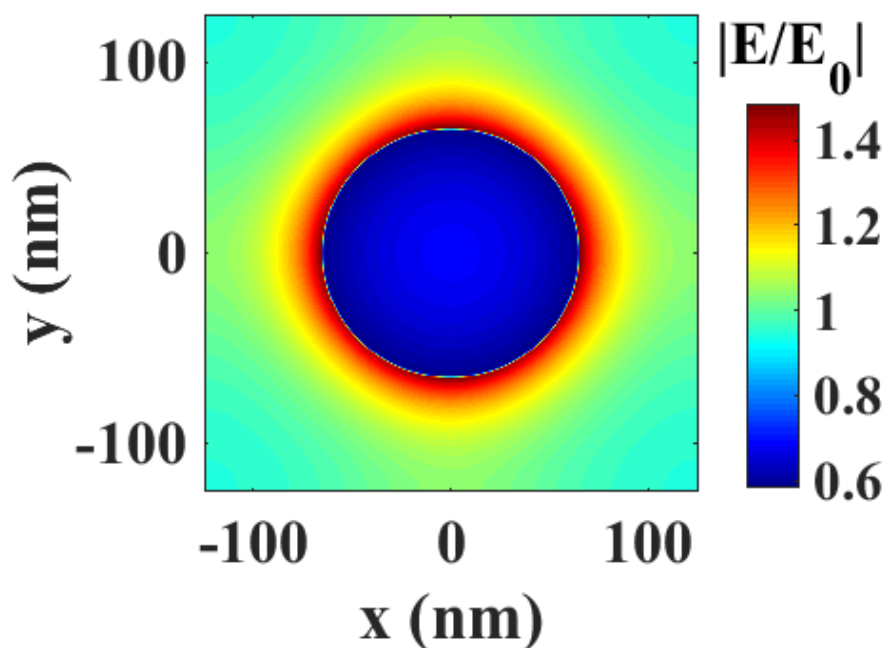


Figure. S3 Electric profile of phosphor at Au nanoparticle's absorption peak. It can be seen that the electric field is strongest at the surface of the phosphor particle resulting in higher sensitivity to changes in material in this area.

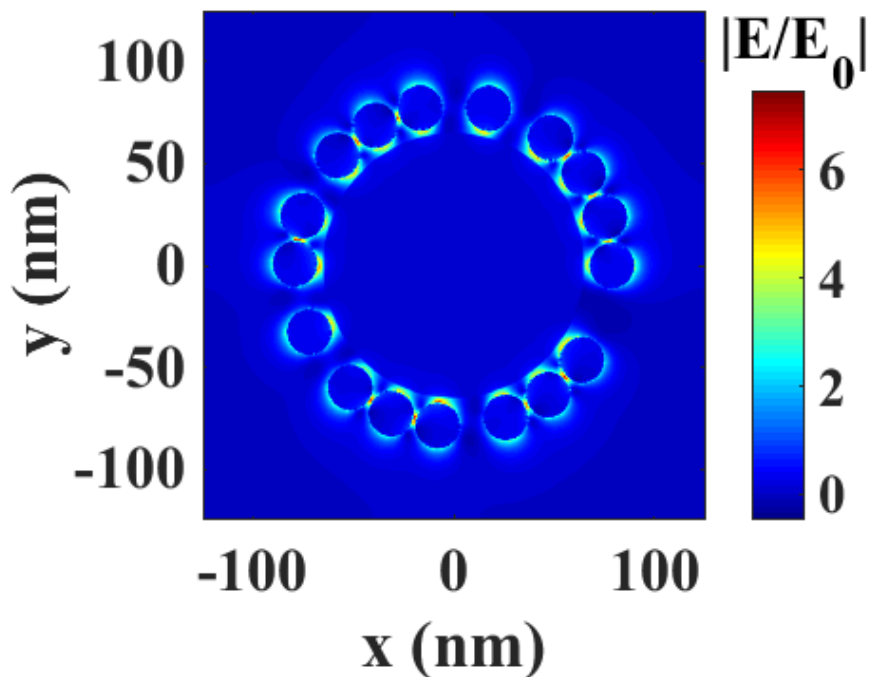


Figure. S4 The electric field contrast by adding Au nanoparticles randomly distributed onto the phosphor at gold absorption peak.

Table S1 Performance comparison of five phosphor/Au nanoparticles converted white LED devices

Device	Phosphor Amount (mg/cm ²)	Luminance (cd/m ²)	CIE _{xy}		LE (lm/W)	CRI	CCT (K)
1	1.39	10020	0.21	0.2	32	---	---
2	1.99	10250	0.27	0.28	33	76	11310
3	3.36	11490	0.30	0.33	36	78	6601
4	4.43	12440	0.31	0.34	40	79	6362
5	5.18	12360	0.34	0.4	39	72	4906

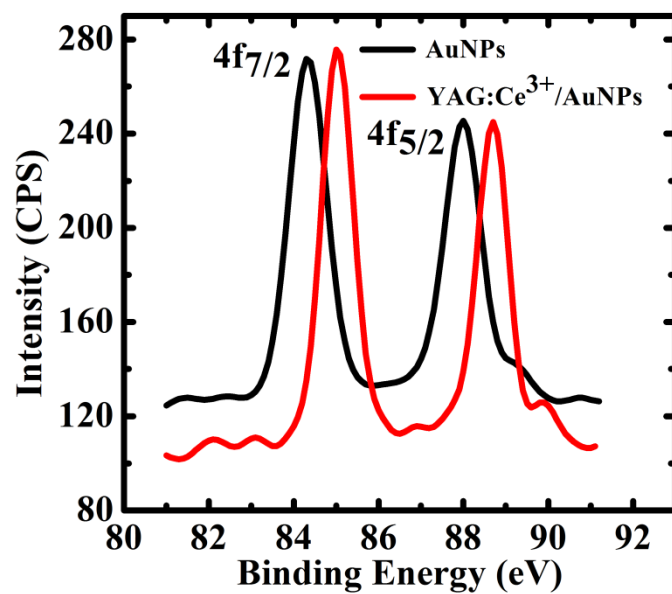


Figure. S5 XPS spectra of Au nanoparticles that shows the binding energies before and after modification with YAG:Ce³⁺