Electronic Supplementary Material (ESI) for RSC Advances.
This journal is © The Royal Society of Chemistry 2016

Luminescence and high temperature ferromagnetism in YAlO nanophosphors: Materials for efficient next generation LEDs and spintronic applications

K. Jayanthi, M. Mohan Rao, L. Satyanarayana, M. Manivel Raja, Kuntumalla Mohan Kumar, Vadali V. S. S. Srikanth, Munisamy Subramanian, C. Anandan and Sunkara V. Manorama

Electronic Supplementary Information

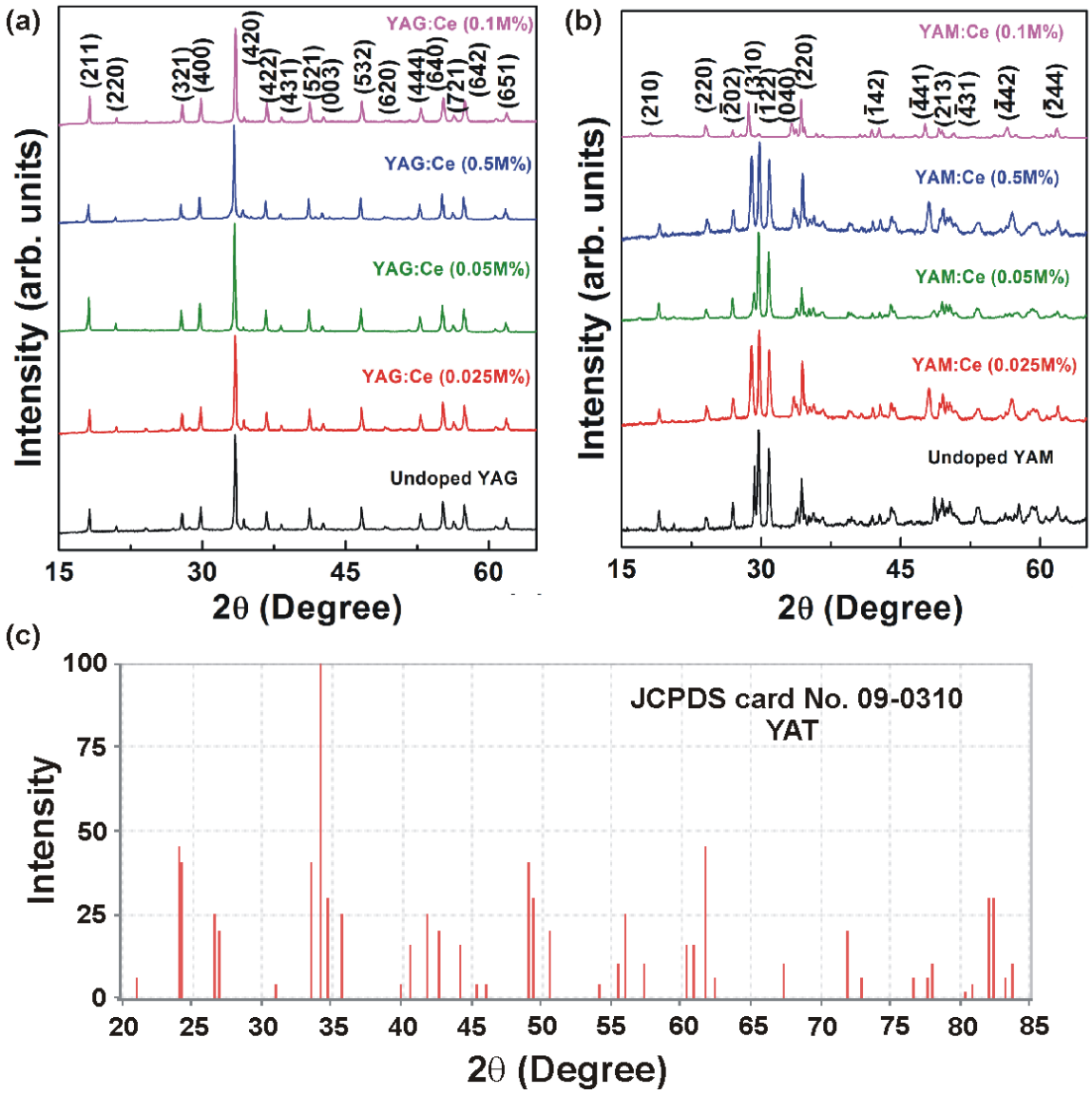

Figure ESI1. XRD patterns of the undoped and Ce doped (a) YAG and (b) YAM NPs. (c) Standard XRD pattern of undoped YAT.

Table ESI1. Different **c**rystallinity related parameters deduced from XRD data of undoped and Ce doped YAlO NPs.

Conditions		YAT			YAG	YAM
			Cell parameters			
		2θ Values	a (or) b (300) peak	c (002) peak	2θ Values	2θ Values
Undoped		34.230	7.5156	4.2406	33.289	29.586
Ce doped	**0.025M%**	34.200	7.5186	4.2452	33.257	29.461
	0.05M%	34.101	7.5375	4.2548	33.248	29.499
	0.1M%	34.231	7.5105	4.2024	33.191	29.462
	0.5M%	34.252	7.5054	4.2408	33.212	28.571

Table ESI2. XPS results of undoped and 0.1M% Ce doped YAlO NPs.

Sample	At.%			
	Y3d	**Al2p**	**O1s**	**Ce3d**
YAlO Undoped (Tetragonal)	17.0	23.0	60.0	-
YAlO:Ce doped (Cubic)	14.6	29.7	54.5	01.2
YAlO:Ce doped (Tetragonal)	15.3	25.8	57.7	01.2
YAlO:Ce doped (Monoclinic)	25.6	15.9	57.2	01.3

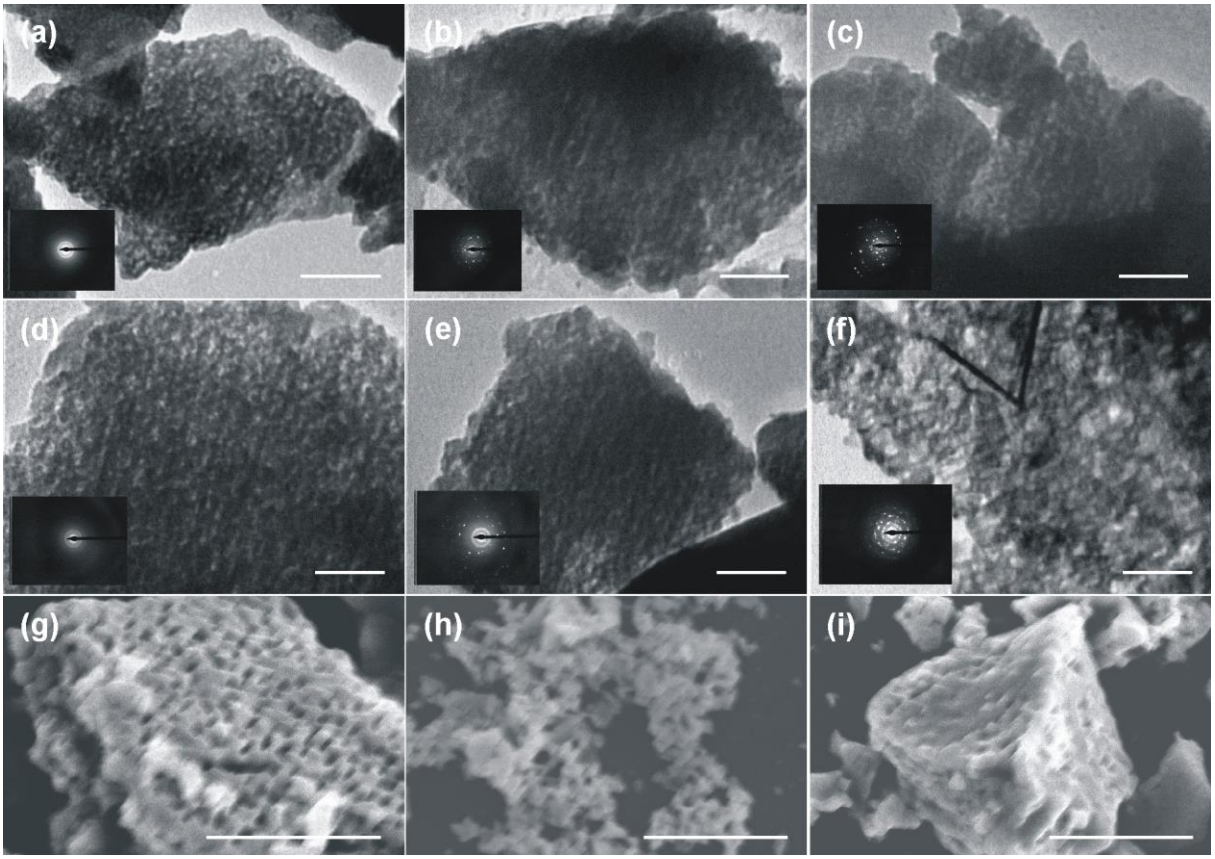

Figure ESI2. (a-c) are TEM images of undoped YAT, YAG and YAM NPs, respectively. (d-f) and (g-i) are TEM and SEM images, respectively of 0.1M % Ce doped YAT, YAG and YAM NPs, respectively. In (a-f) and (g-i) the length of scale bars are 50 nm and 5 µm, respectively.

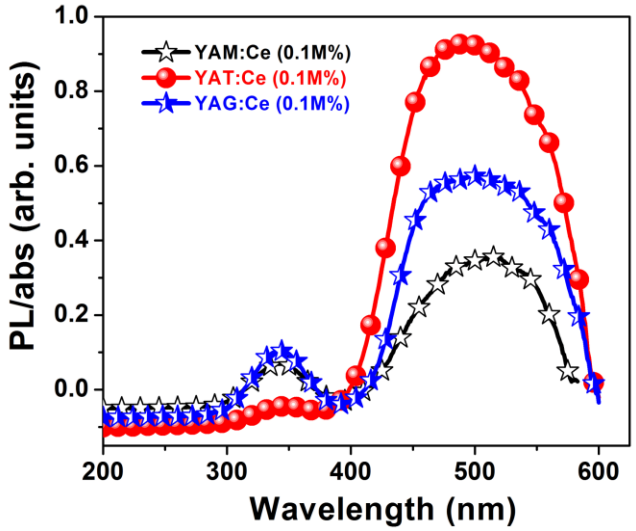

Figure ESI3. Absorption spectra of different YAlO NPs.

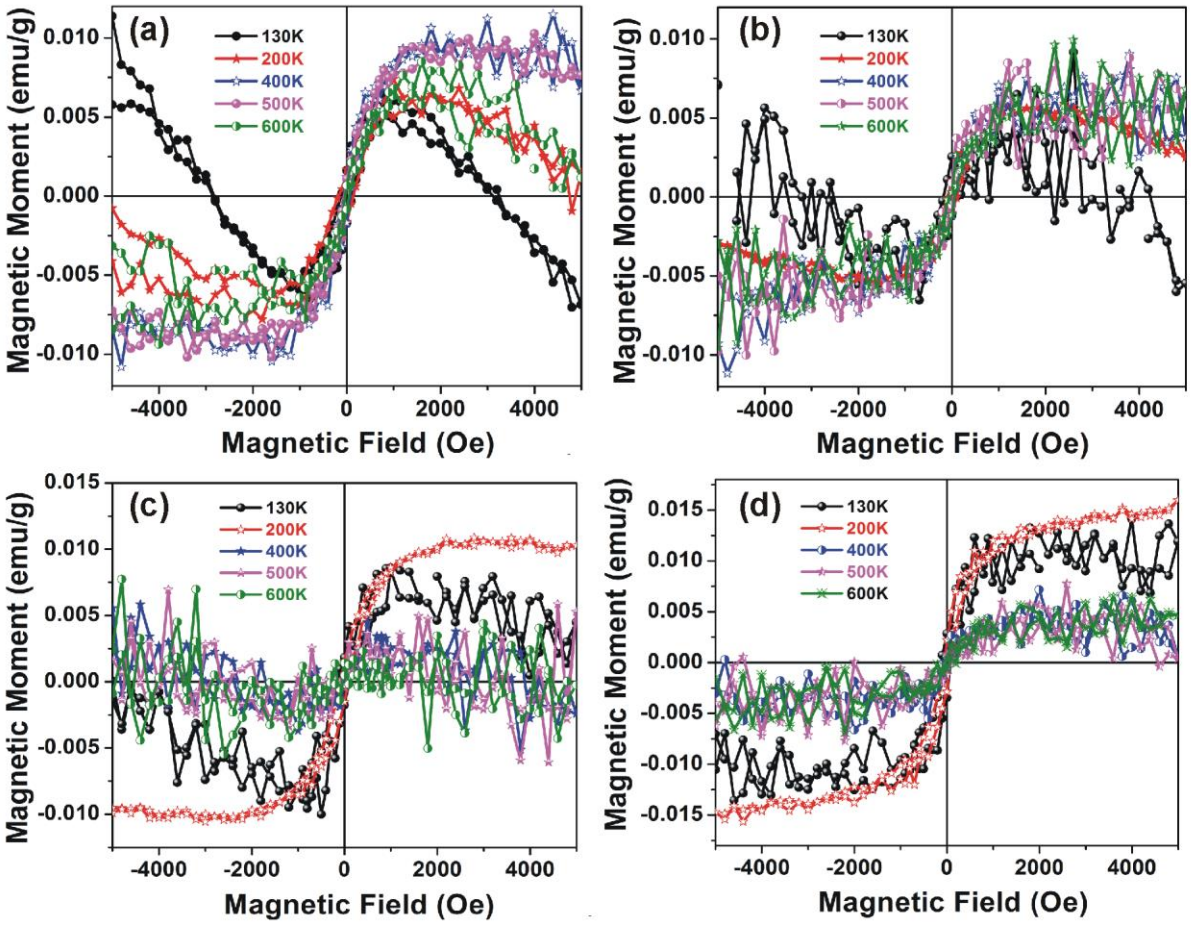

Figure ESI4. Magnetic properties of undoped and Ce doped YAlO NPs. Hysteresis loops recorded at different temperatures from 130 to 600 K. RT VSM plots of undoped and Ce doped YAG (a, b) and YAM (c, d) shows similar Hysteresis behavior with saturation magnetization.