SUPPORTING INFORMATION

Influence of neodymium-doping on structure and properties of yttrium aluminium garnet †

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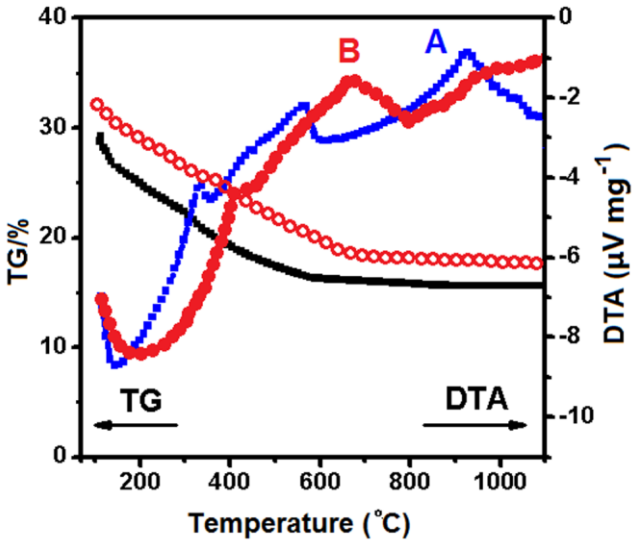

Fig. S1 TG and DTA curves of YAG precursors with 20 atom% Nd-doping (A) and without

Nd-doping (B)

Differential thermal analysis (DTA) and thermogravimetric analysis (TGA) were carried out on a CRY-2 differential thermal analyzer and a TGA/SDTA851^e analyzer, respectively, under nitrogen flow. The precursor was heated from 100 °C to 1100 °C at a heating rate of 10 °C min^{-1}.

The combined TG and DTA curves obtained from the YAG precursors with Nd-doping (A) and without Nd-doping (B) are shown in Fig. S1. The TG curve of the YAG precursor with Nd-doping (A) indicates a rapid mass loss of nearly 15.4% from 100 to 1100 °C, which corresponds to a endothermic peak from 100 to 400 °C and two exothermic peaks at 556 and 908 °C in the DTA curve. The endothermic peak at low temperature can be attributed to the moisture remove. The exothermal peak at 556 °C is due to the decomposition of NH_4HCO_3 and nitrate ions in the precursor with the evolution of the gases CO, CO_2, NO and NO_2. While the exothermic peak at 908 °C could be attributed to the crystallization of different phases of YAG in YAG A, the only exothermic peak at high temperature for the YAG precursors without Nd-doping (B) suggests that its crystallization temperature is higher than that of Nd:YAG.