Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Rapid Annealing: Minutes to enhance the green emission of Tb^{3+}-doped $ZnGa_2O_4$ nanophosphor with restricted grain growth

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The typical time-temperature profile when the set temperature is 800 °C can be divided into three different segments (Fig. S1a). During Segment 1, the temperature rise with respect to time is linear and the light output is the maximum. During Segment 2, PID control lowers light output, leading to a non-linear rise in temperature up to the set point, to prevent overshooting. Segment 3 represents the soaking time during which light output is controlled to maintain the set temperature. In a typical run (Fig. S1a) with 800 °C as the set point, the temperature rises to 570 °C in the first 70 s (segment 1), reaching 800 °C over the next 250 s (segment 2).

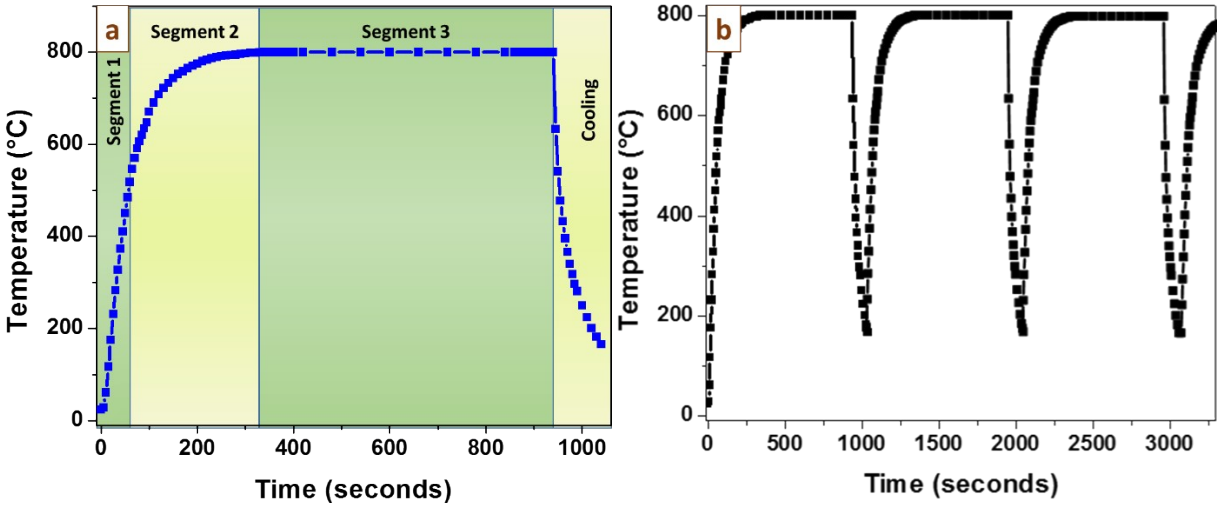

Fig. S1(a) Time-temperature profile in RA for 800 °C set temperature; (b) Time-temperature profile during cyclic annealing with a set point of 800 °C, with sample cooled to 150 °C before being heated again