Supporting information

Novel Synthesis and Luminescence Properties of $t$-LaVO$_4$:Eu$^{3+}$ Micro Cube

Baiqi Shao, Qi Zhao, Ning Guo, Yongchao Jia, Wenzhen Lv, Mengmeng Jiao, Wei Lü and Hongpeng You*

State Key Laboratory of Rare Earth Resource Utilization, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, and Graduate University of the Chinese Academy of Sciences, Beijing 100049, P. R. China

Figure S1 SEM image of LaVO$_4$:Eu$^{3+}$ samples prepared with La(NO$_3$)$_3$ as precursor when 1,3,5-BTC was absent.

Experiment process. In a typical synthesis, 0.5 mmol NaAc was added into 30 mL solution containing 0.5 mmol La$_{0.95}$Eu$_{0.05}$(NO$_3$)$_3$ under magnetic stirring, and then the pH value was adjusted to 4 with HAc (1:1). After stirring for 10 min, 10 mL solution containing 0.5 mmol NH$_4$VO$_3$ was introduced to the above mixture. After further
stirring for 10 min, the mixture was transferred into 50 mL Teflon-lined autoclave and maintained at 180 °C for 24 h. After the autoclave was cooled naturally, the precipitation was collected and washed with water and ethanol in turn for 3 times, and air dried at 60 °C for 12 h.

**Figure S2** SEM image of LaVO₄:Eu³⁺ samples prepared with pH adjusted to 4.0 by HCl, and FT-IR patterns of the samples prepared with pH adjusted to 4.0 by HCl and HAc + NaAc, respectively. The upper-right panel is the magnified image of the pink area.

**Figure S3** TEM and corresponding HRTEM images of the 2 h hydrothermal treated precursors.
Figure S4 FT-IR spectra of the as-obtained cube and cuboid rod-shaped LaVO$_4$:Eu$^{3+}$ samples.