

## Supplementary Information

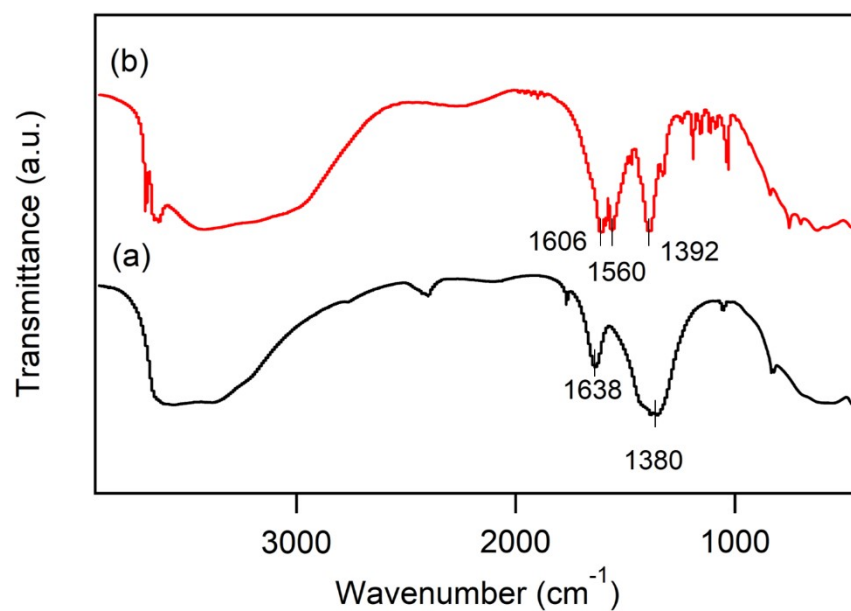
### **Recyclable chloride trapping and sustained nicotinate release monitored by photoluminescence of Eu<sup>3+</sup>-doped layered yttrium hydroxide**

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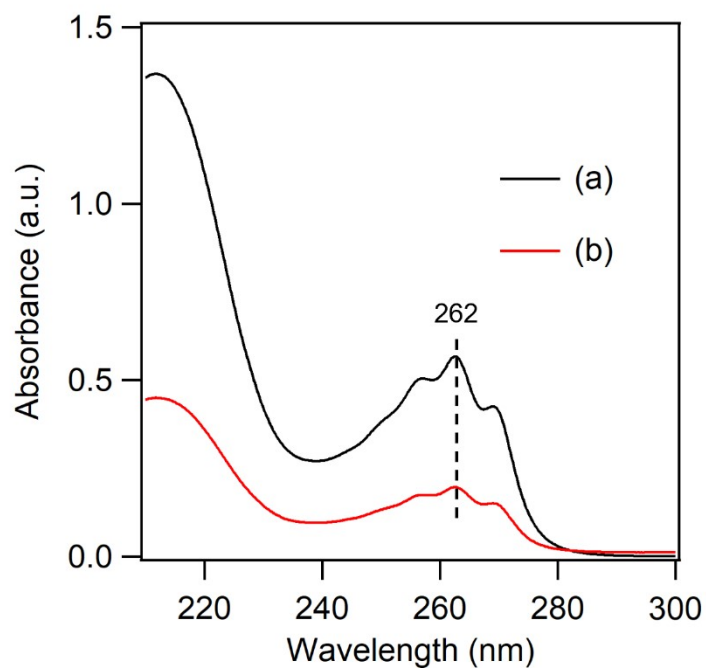
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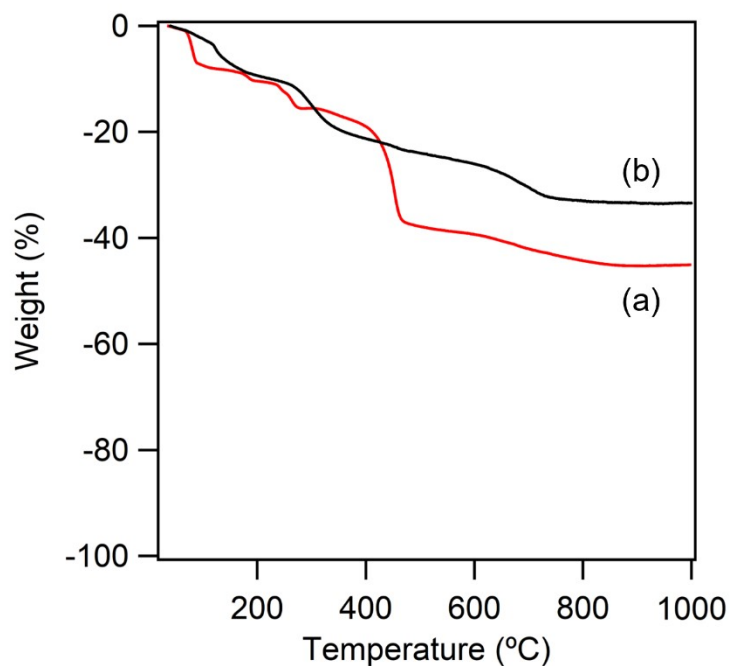
*J. Mater. Chem. C*



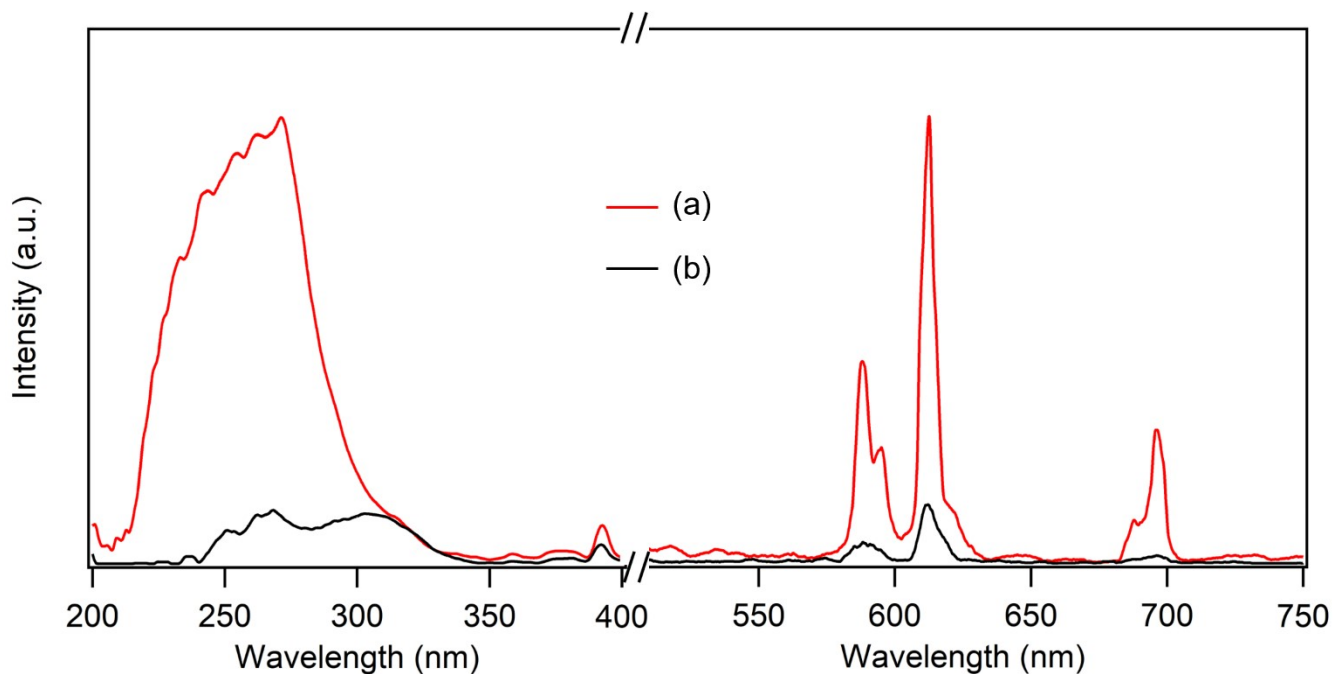
**Fig. S1** FT-IR spectra of (a) LYH:Eu and (b) NA-LYH:Eu.



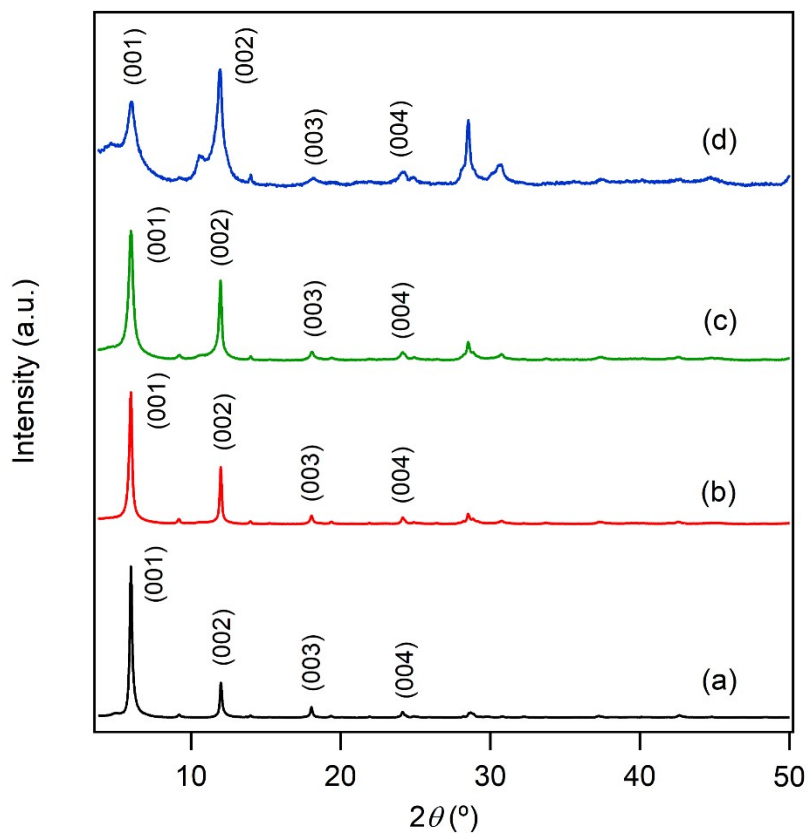
**Fig. S2** UV-vis absorption spectra of aqueous solutions containing (a) pure nicotinic acid and (b) NA-LYH:Eu particles.



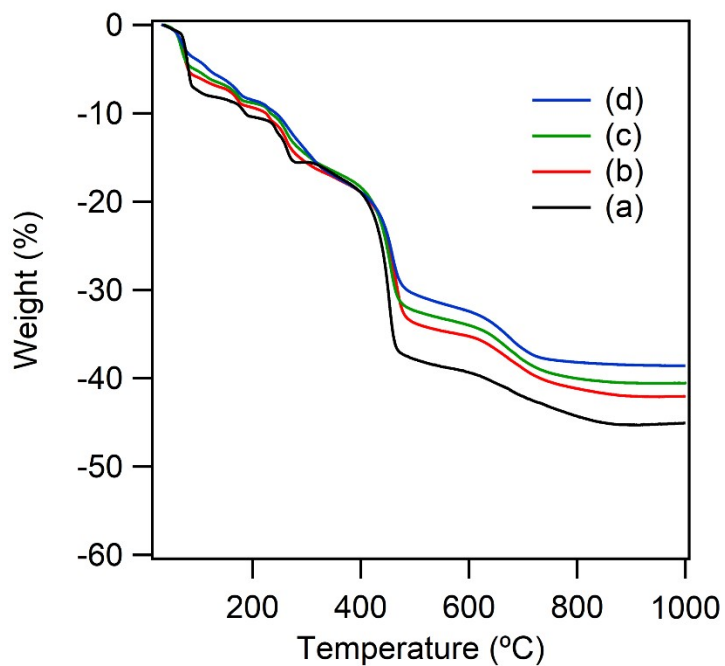
**Fig. S3** TGA curves of NA-LYH:Eu (a) before and (b) after reaction in a 0.5 M aqueous NaCl solution for 24 h.



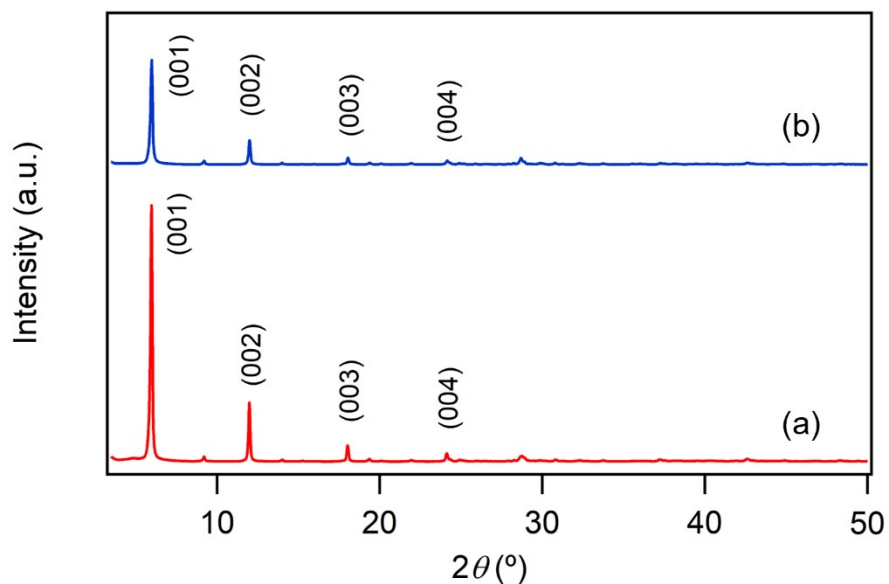
**Fig. S4** Excitation and emission spectra ( $\lambda_{\text{em}} = 613 \text{ nm}$ ,  $\lambda_{\text{ex}} = 268 \text{ nm}$ ) of NA-LYH:Eu (a) before and (b) after reaction in a 0.5 M aqueous NaCl solution for 24 h.



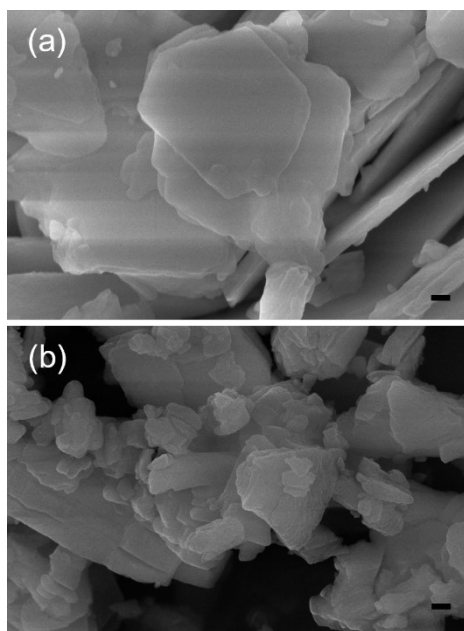
**Fig. S5** Powder XRD patterns of NA-LYH:Eu (a) before and after (b) the 1st, (c) the 2nd, and (d) the 3rd regeneration.



**Fig. S6** TGA curves of NA-LYH:Eu (a) before and (b) after (b) the 1st, (c) the 2nd, and (d) the 3rd regeneration.



**Fig. S7** Powder XRD patterns of NA-LYH:Eu when LYH:Eu hosts obtained after reaction at (a) 90 °C for 12 h and (b) 45 °C for 6 h were used.



**Fig. S8** FE-SEM images of NA-LYH:Eu particles obtained after reaction at (a) 90 °C for 12 h and (b) 45 °C for 6 h (bar = 100 nm).