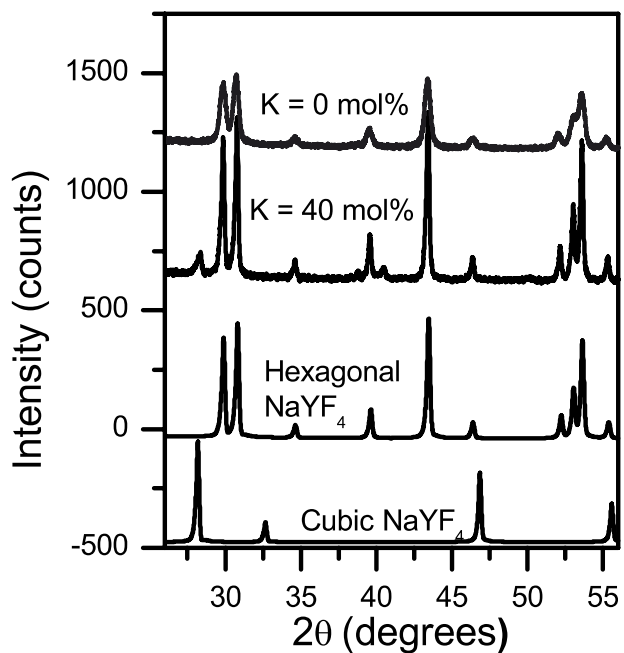


1 Supporting information

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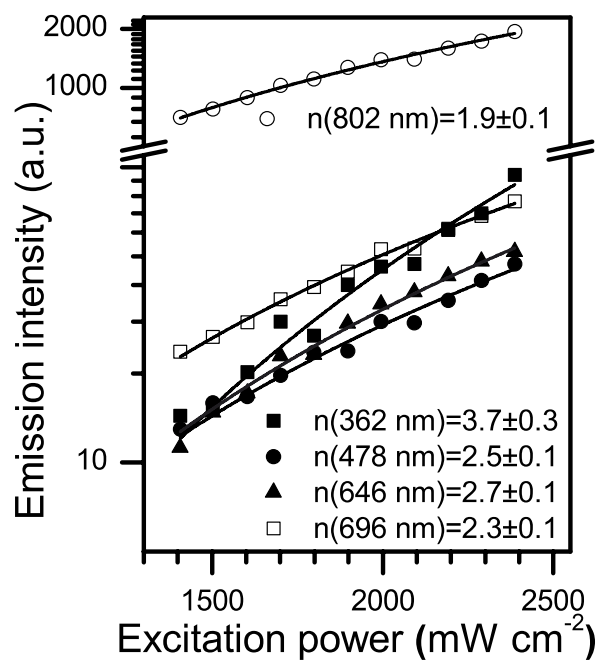
3

4 **Figure S-1.** Typical XRD pattern of the as-prepared NaYF₄:20 % Yb³⁺, 0.5 % Tm³⁺ nanocrystals
5 synthesized in the presence of 0 and 40 mol% of K⁺ concentrations along with reference patterns.

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10 **Figure S-2.** The excitation power dependence of the emission bands with peak wavelengths at 362,
 11 478, 646, 696 and 802 nm. The curves are fitted with an equation $y = ax^n$, where n determines the
 12 average number of sequential excitation processes required to produce one emission photon.