Improving upconversion luminescence intensity of $BiTa_7O_{19}:Er^{3+}/Yb^{3+}$ by polyvalent Sb co-doping

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Supplementary data

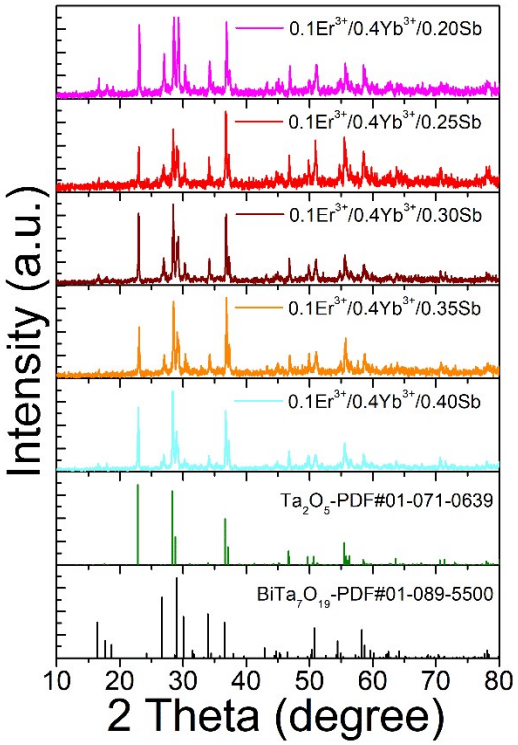

Fig. S1. XRD patterns of $BiTa_7O_{19}:0.1Er^{3+}/0.4Yb^{3+}/xSb$ (x = 0.20, 0.25, 0.30, 0.35, 0.40) phosphors by firing at 1200°C without optimization and references Ta_2O_5 PDF#01-071-0639 and $BiTa_7O_{19}$ PDF#01-089-5500.

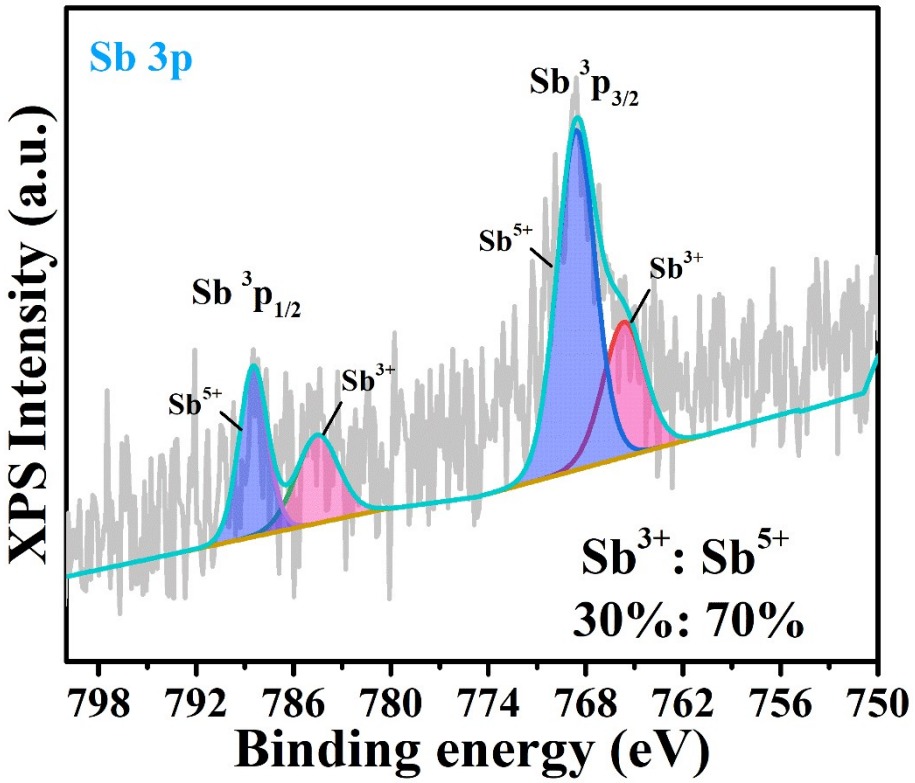

Fig. S2. XPS spectrum of antimony in $BiTa_7O_{19}$:0.1Er^{3+}/0.4Yb^{3+}/0.35Sb phosphor by firing at 1200°C.