

Fig. S1 Cell volume of $Y_{1.96}Ce_{0.04}MAI_4SiO_{12}$ per ion radius (IR) of M cation. The trend doesn't show wholly linear due to an unexpected small volume of M = Ba compound. Red dashed line illustrates a linear trend.

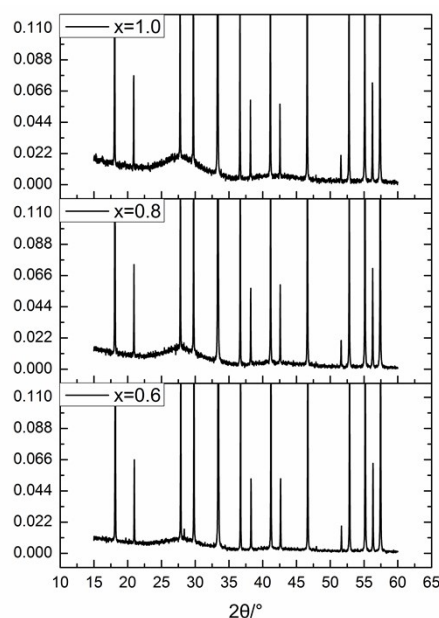


Fig. S2 Normalized XRD patterns of $Y_{2.96-x}Ba_xCe_{0.04}Al_{5-x}Si_xO_{12}$ samples.

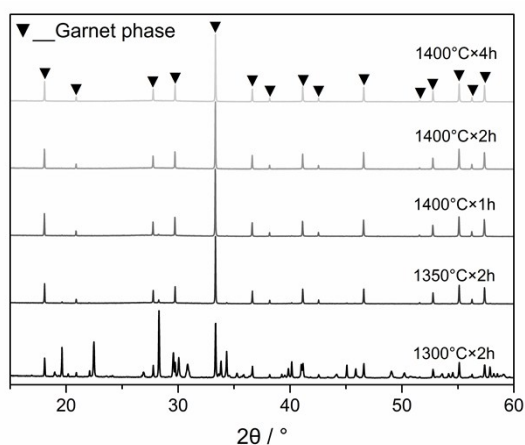


Fig. S3 XRD patterns of the samples with nominal composition of $Y_{1.96}BaAl_4SiO_{12}:0.04Ce^{3+}$ sintered at 1300-1400 °C with holding time of 1-4 h.