

Fig.S1(a) Schematic representation of experimental set up used to obtain the upconversion emission spectrum and **(b)** optical tweezers setup used to obtain the decay lifetime data.

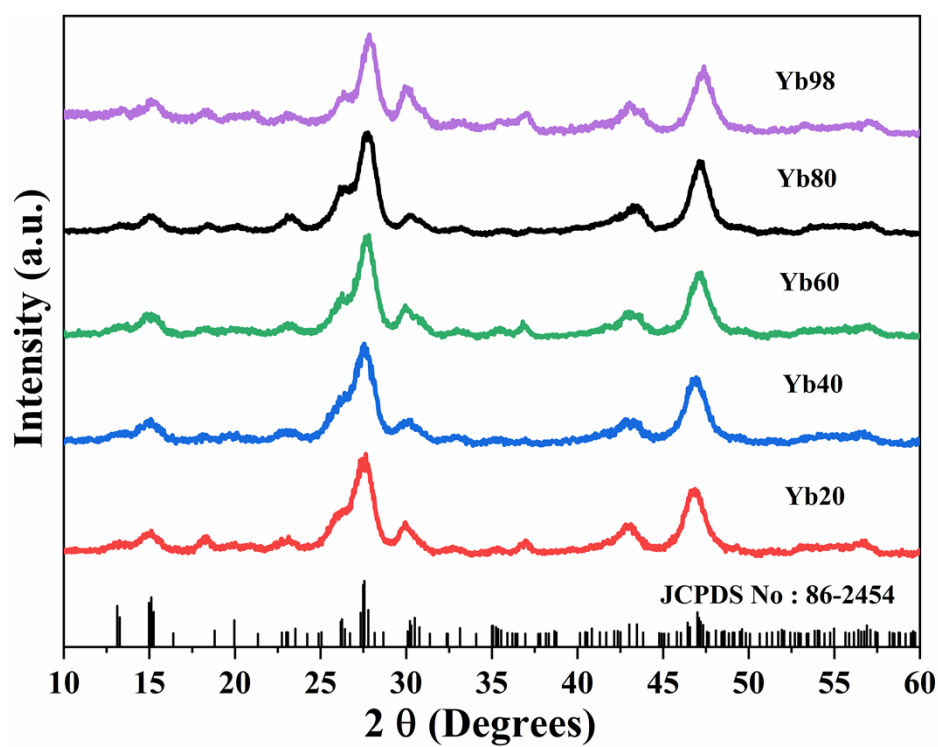


Fig-S2: X-ray diffraction pattern of RbY_2F_7 of varying Yb concentration from 20% to 98%

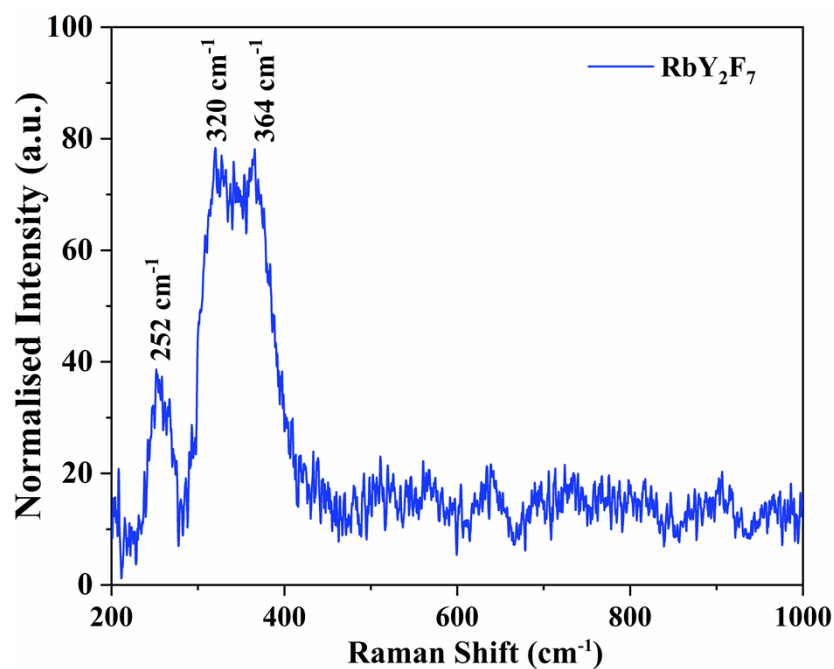


Fig-S3 Raman spectrum of the undoped RbY_2F_7 nanoparticles

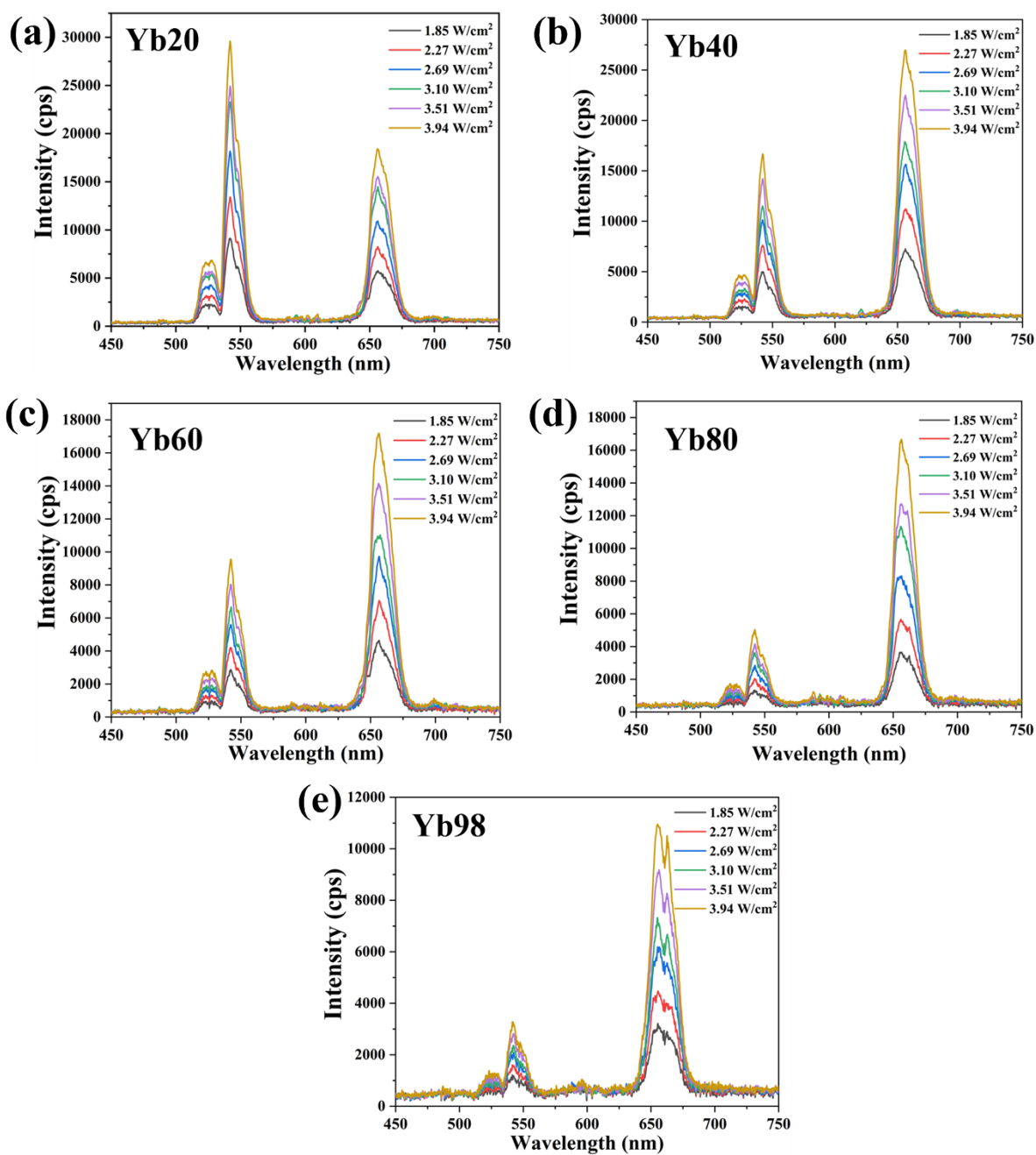


Fig-S4: Power dependent upconversion emission spectrum of RbY_2F_7 of varying Yb concentration from 20% to 98%