Supporting Information

An interplay between local distortion at lattice sites and the optical and electrical properties of Eu^{3+} doped $MNbO_3$ (M= Na and K) compounds

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1.0. Instrumentation:

A rotating anode based powder X-ray diffractometer, which was procured Japan from Rigaku is used to characterize all the compounds using CuK_α (λ= 1.5406 and 1.5444Å) monochromatic radiation. For each experiment, a slight amount of the sample was placed on the sample holder using a collodion solution. For FTIR study we have used a Platinum ATR spectrometer within the spectral range 5000-500 cm^{-1} procured from Bruker alpha. All the experiments were carried out after making a pellet of the samples with KBr. Approximately, 1.0 % sample was mixed thoroughly into 300 mg fine KBr and then finely ground and put into a pellet-forming die. For ferroelectric property studies, we have used aix ACCT's TF analyser 2000. An Edinburgh CD-920 unit equipped with M 300 monochromator procured from Edinburgh Analytical Instruments, UK was used for photoluminescence study and the data acquisition and analysis were carried with the help of F-900 software. A 450 W xenon lamp was used as excitation source while photomultiplier tube was used as detector in the wavelength range 300-900 nm. The well established Time-correlated single-photon counting (TCSPC) technique has been used to carry the lifetime measurement. For all photoluminescence measurements, an equal amount of sample was pasted on the glass slide of sample holder using a collodion solution and for each measurement 5 number of scan was taken.

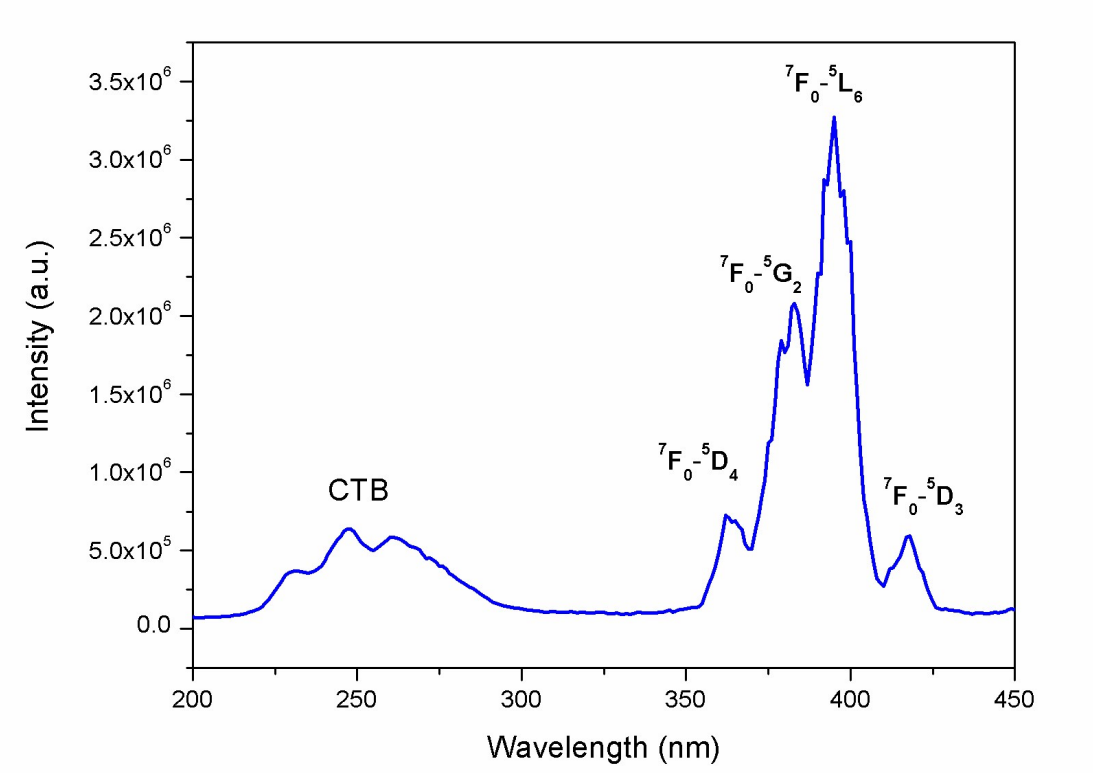

Figure S1: Excitation spectrum of Eu^{3+} doped $NaNbO_3$ at 615 nm emission wavelength.

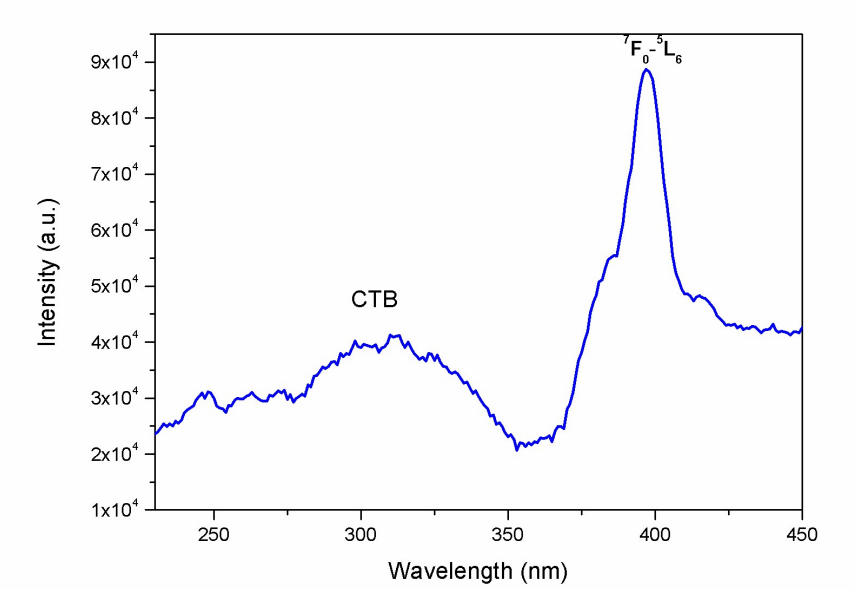

Figure S2: Excitation spectrum of Eu^{3+}:$KNbO_3$ at 615 nm emission wavelength.

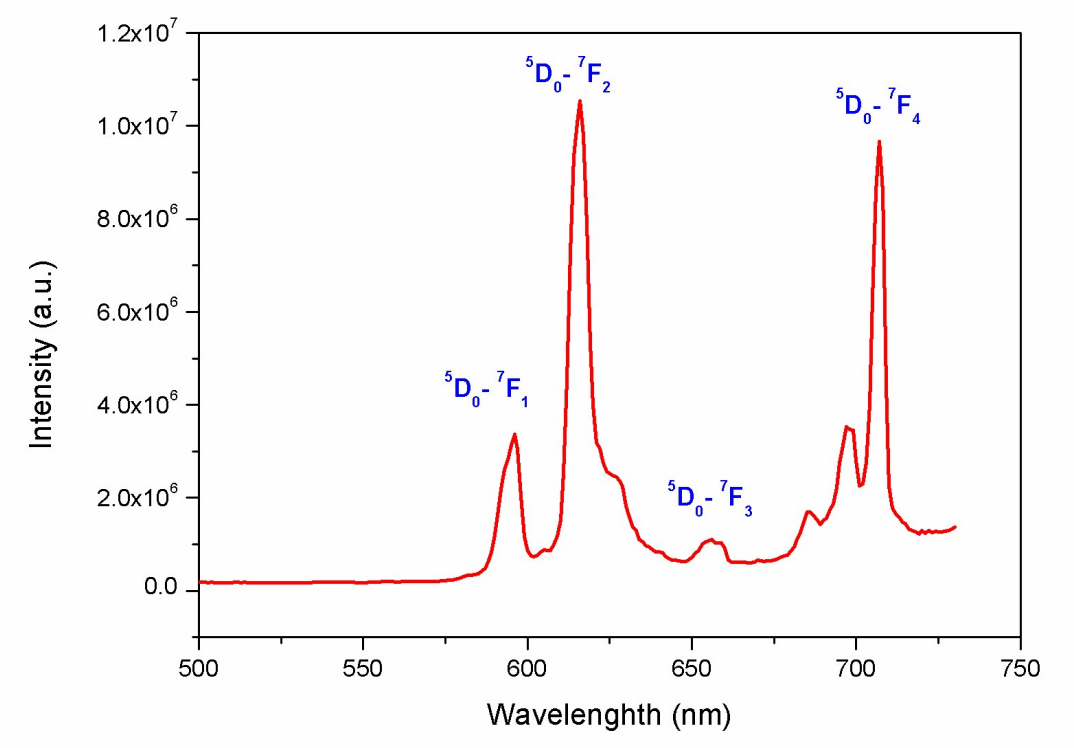

Figure S3: Emission spectrum of Eu^{3+}:$NaNbO_3$ at 395 nm excitation wavelength.

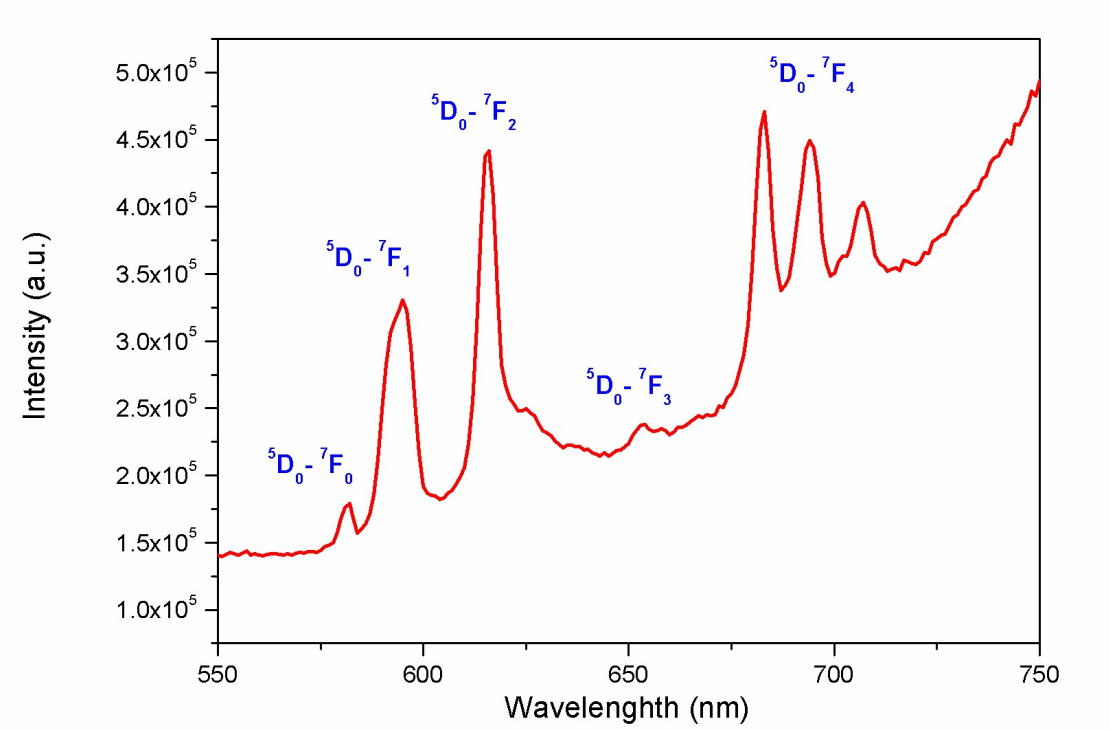

Figure S4: Emission spectrum of Eu^{3+}:$KNbO_3$ at 395 nm excitation wavelength.

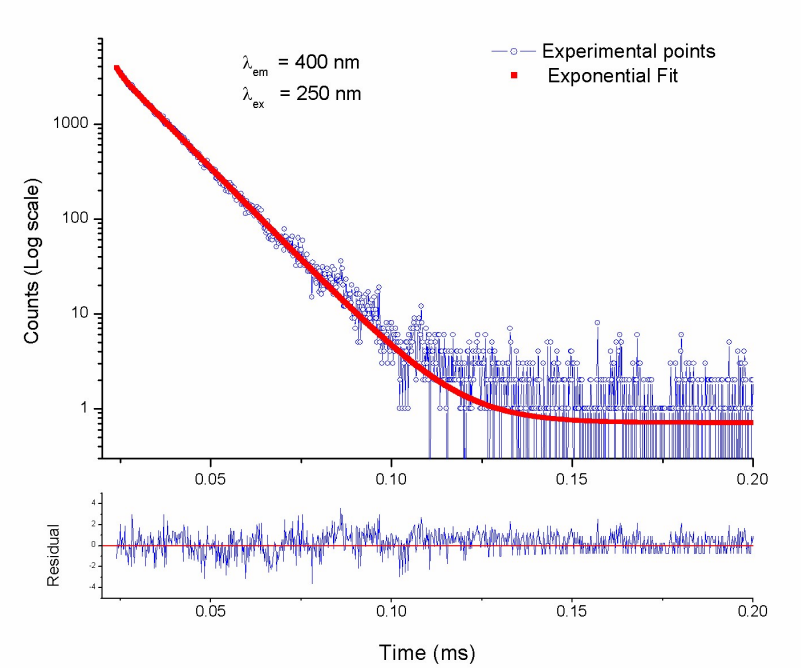

Figure S5: Photoluminescence decay profile of $KNbO_3$ at 250 nm excitation and 400 nm emission wavelength

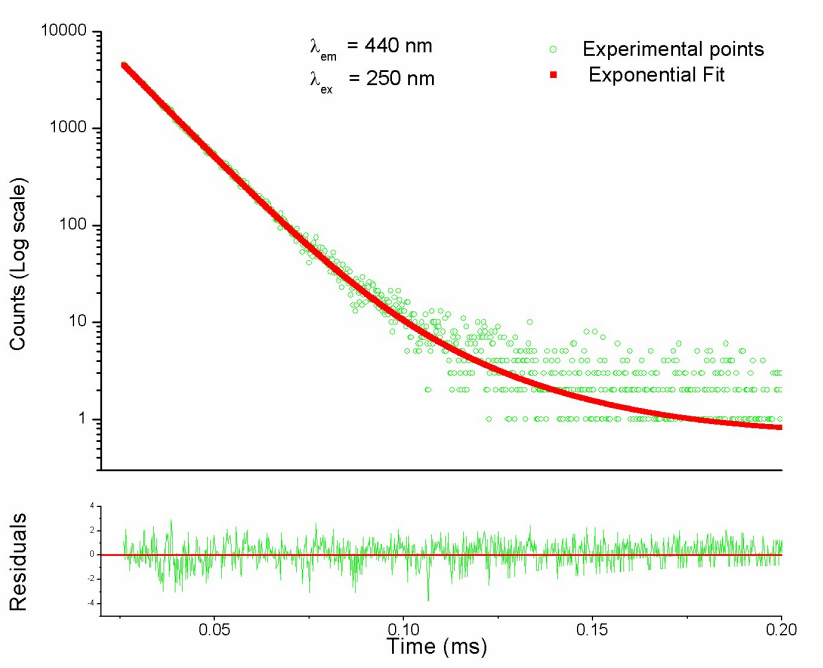

Figure S6: Photoluminescence decay profile of $KNbO_3$ at 250 nm excitation and 440 nm emission wavelength

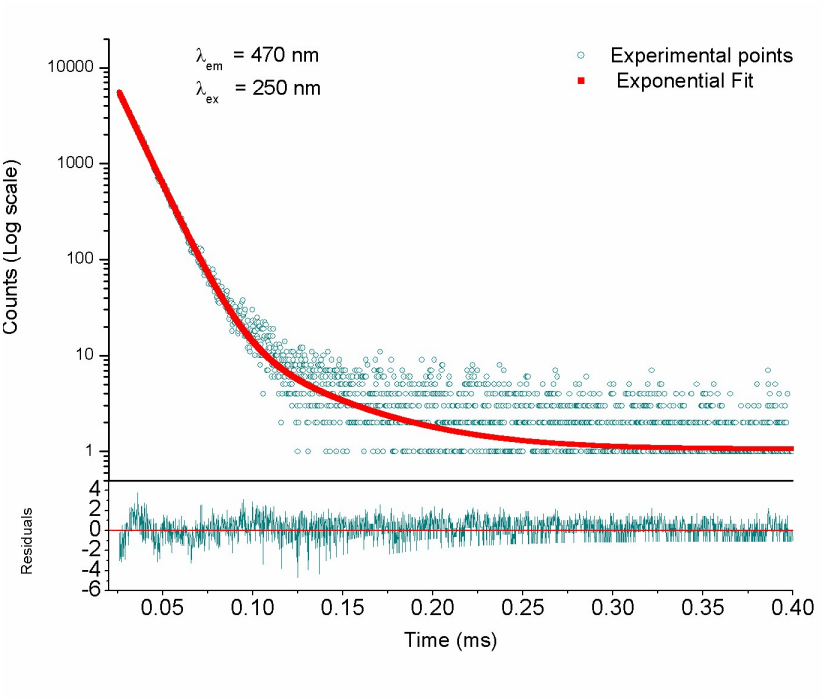

Figure S7: Photoluminescence decay profile of $KNbO_3$ at 250 nm excitation and 470 nm emission wavelength

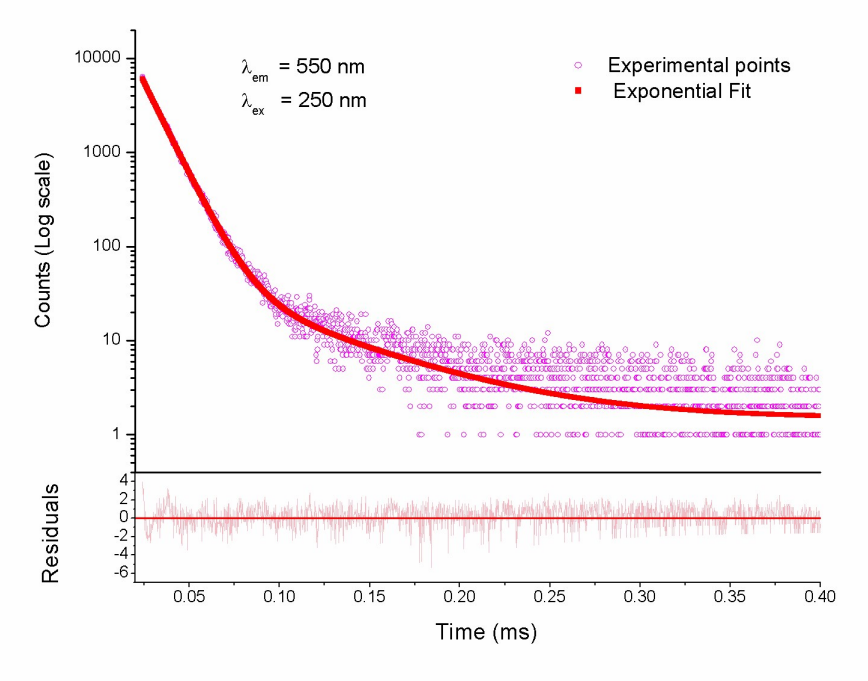

Figure S8: Photoluminescence decay profile of $KNbO_3$ at 250 nm excitation and 550 nm emission wavelength

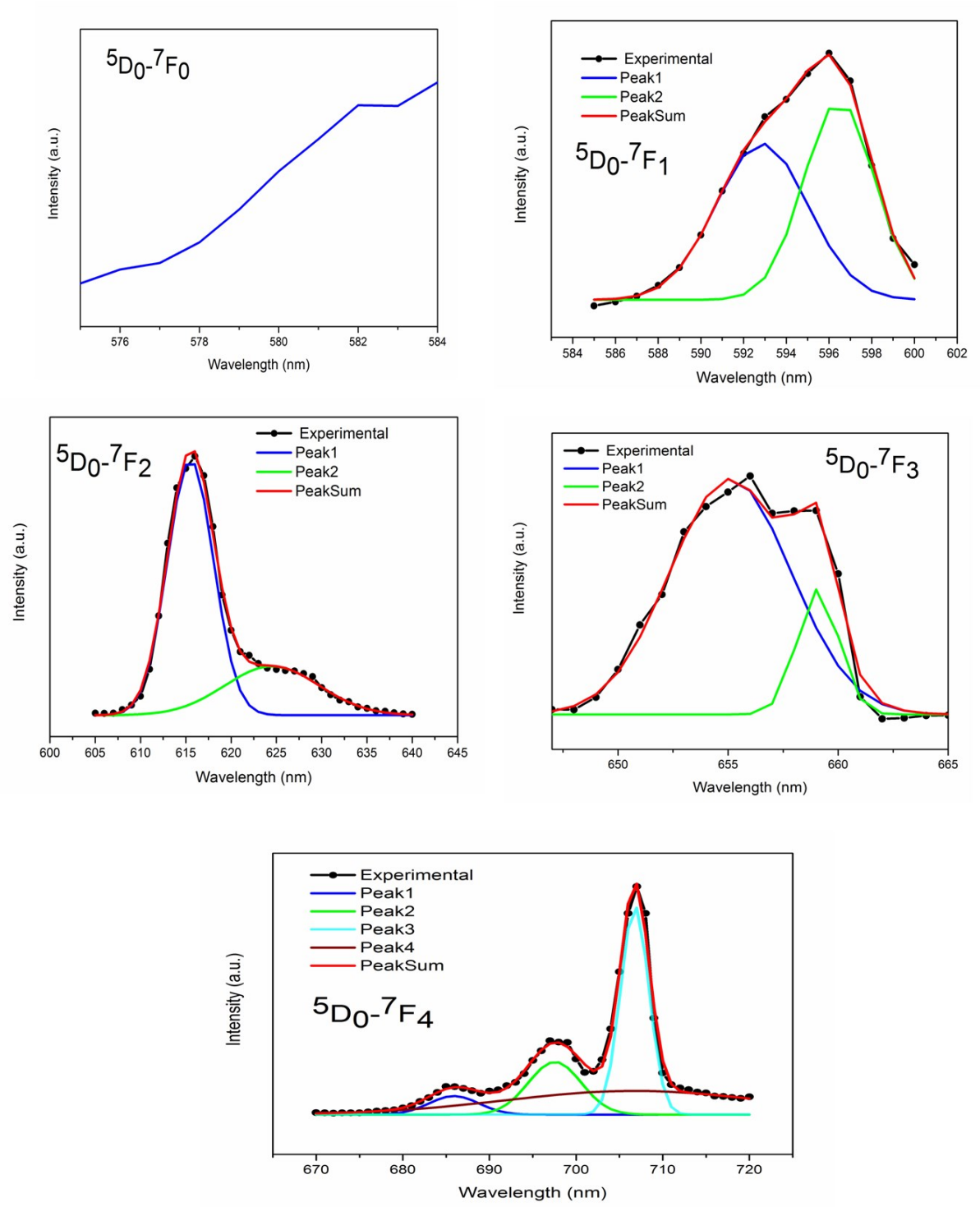

Figure S9: Stark splitting of the characteristics emission lines of Eu^{3+}ion in $NaNbO_3$