Material Characterization:

The crystallinity of the samples was studied using the **Panalytical X'pert Pro-diffractometer**, between 2θ range of 5˚ to 70˚, using Cu-K radiation with the wavelength λ=1.5406. Morphology of the samples are characterised using **Thermoscientific Apreo S** HR-SEM within the range of 500nm – 5000nm also studying the elemental composition using EDS. **Versaprobe III** X-Ray Photoelectron spectroscopy was used to study the electronic configuration and chemical composition of the Zn 2p, C 1s, O 1s , and Eu 4d plotted and deconvoluted using the origin software. **Shimadzu IR-Tracer** was used to study the functionals groups of the materials using infrared spectroscopy within the range of 400 cm^{-1}-4000cm^{-1}. Raman spectra was studied using **Horiba LabRAM HR Evolution** using a probe wavelength of 532 nm and 633 nm continuous lasers within the range of 600 cm^{-1} -1800cm^{-1}. **Shimadzu UV 3600 plus** spectrometer was used to find UV absorption spectra within the excitation range of 200 nm to 500 nm. The **FLS1000** PL spectrometer (Edinburg instruments) was used to study the photoluminescence properties with the emission range of 300 nm to 800 nm. The obtained time resolved photoluminescence spectroscopy was fitted using the **bi-exponential function**. The Non-linear Absorption coefficient and the Normalized transmittance is found using the Sheik Bahae's theoretical fit [41] to match with the reverse saturable absorption data.

Table S1 Equations for calculating the parameters of the crystal structure

	Lattice parameter		**Crystallite size**		**Dislocation Density**	
Equations	$a = d_{hkl}\sqrt{h^2 + k^2 + l^2}$		$D = \frac{n\lambda}{\beta \sin\theta}$		$\delta = \frac{1}{D}$	
Descriptions	d_{hkl}	Interplanar spacing	n	Scherrer's constant (0.9)	D	Crystallite size
			λ	Wavelength of XRD (0.15406nm)		
	$(h\ k\ l)$	Miller indices	β	Full width half maximum		
			θ	Diffraction angle		

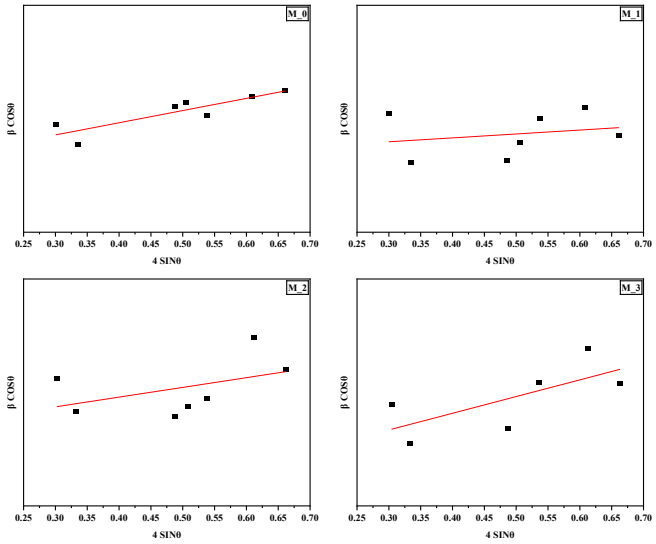
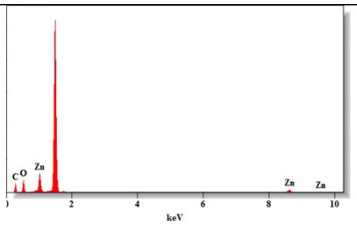
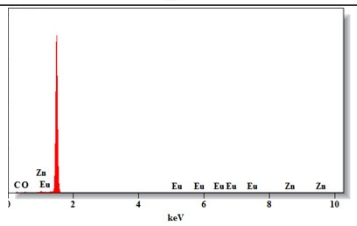
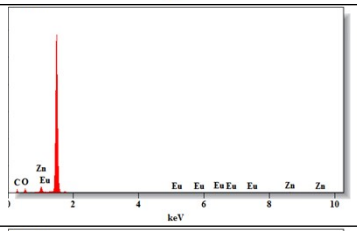
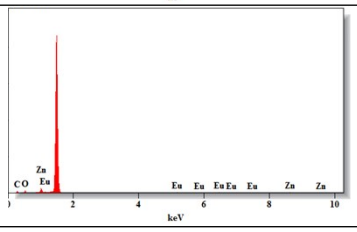


Fig. S1 Williamson-Hall plot of the pure and doped MOF-5 samples

Table S2. EDS Spectrum and Weight percentage of pure and doped MOF-5

Sample	Elements	Weight Percentage	EDS
MOF-5	Zinc	26.08	
	Oxygen	43.53	
	Carbon	30.39	
Total		100.00	
1% doped MOF-5	Zinc	27.61	
	Oxygen	34.72	
	Carbon	36.71	
	Europium	0.87	
Total		100.00	
2% doped MOF-5	Zinc	32.76	
	Oxygen	36.63	
	Carbon	28.65	
	Europium	1.96	
Total		100.00	
3% doped MOF-5	Zinc	34.84	
	Oxygen	35.99	
	Carbon	26.32	
	Europium	2.85	
Total		100.00	

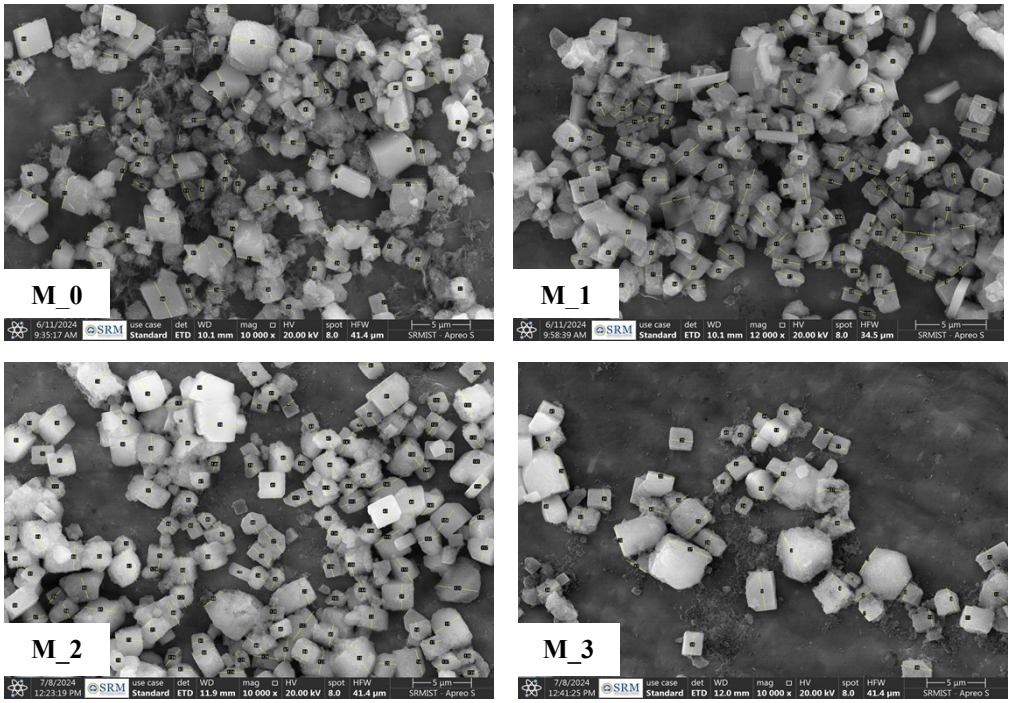


Fig. S2 HRSEM images of pure and doped MOF-5 whose grain size is calculated using imageJ software

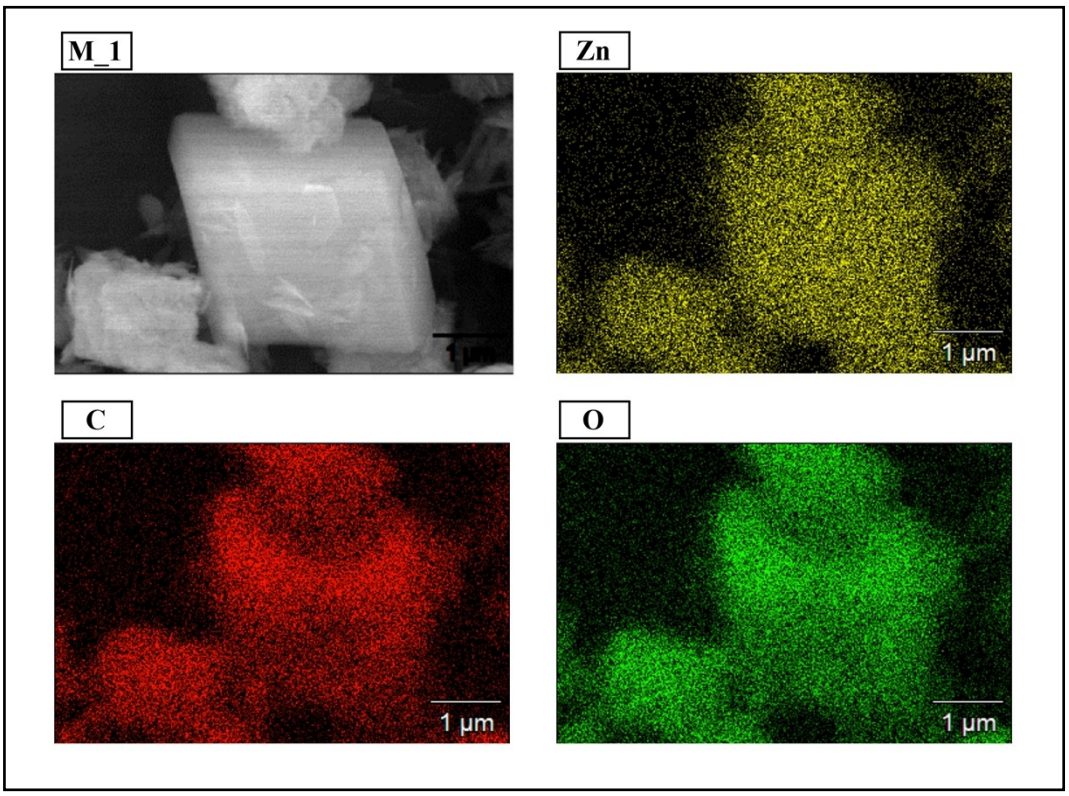


Fig. S2(a) EDS mapping of M_0 sample

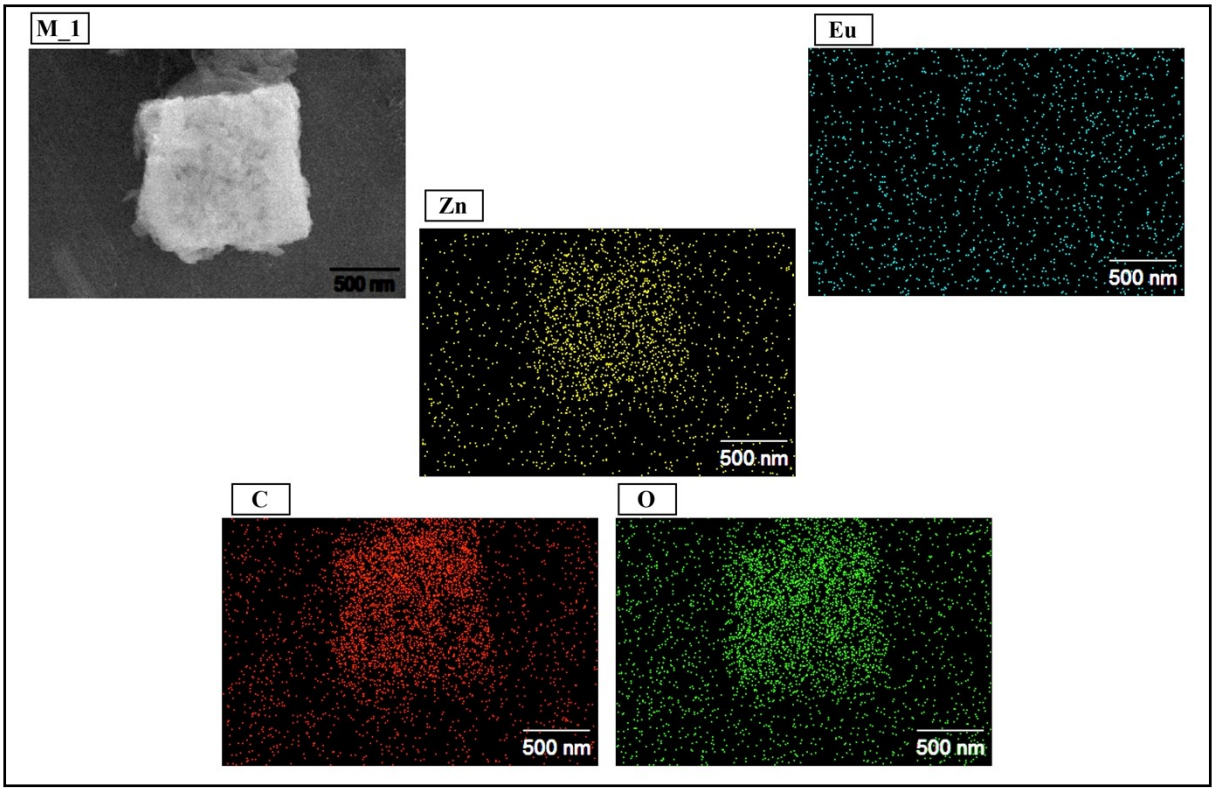


Fig. S3(b) EDS of M_1 sample

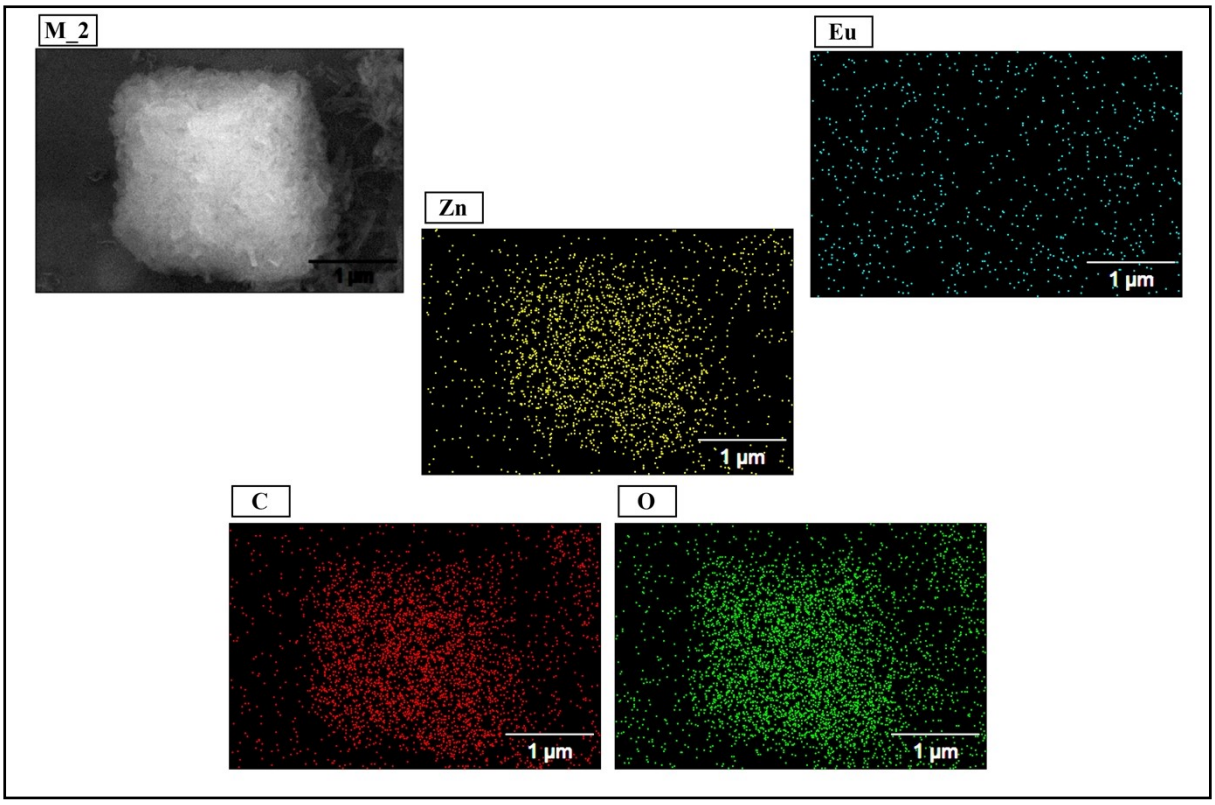


Fig. S3(c) EDS of M_2 sample

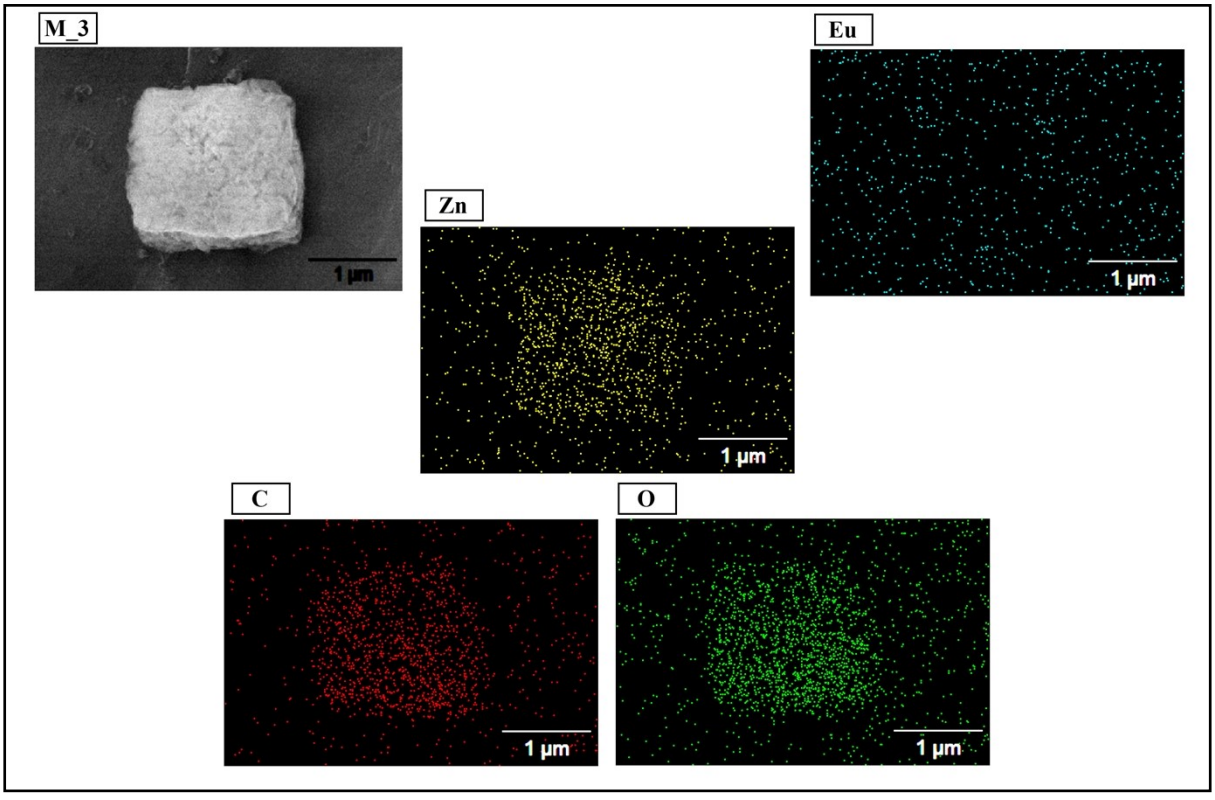


Fig. S3(d) EDS of M_3 sample

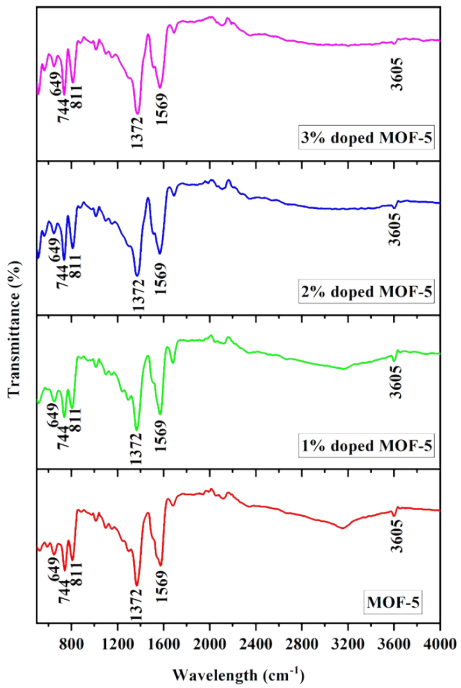


Fig. S4 FTIR spectra of pure and doped samples

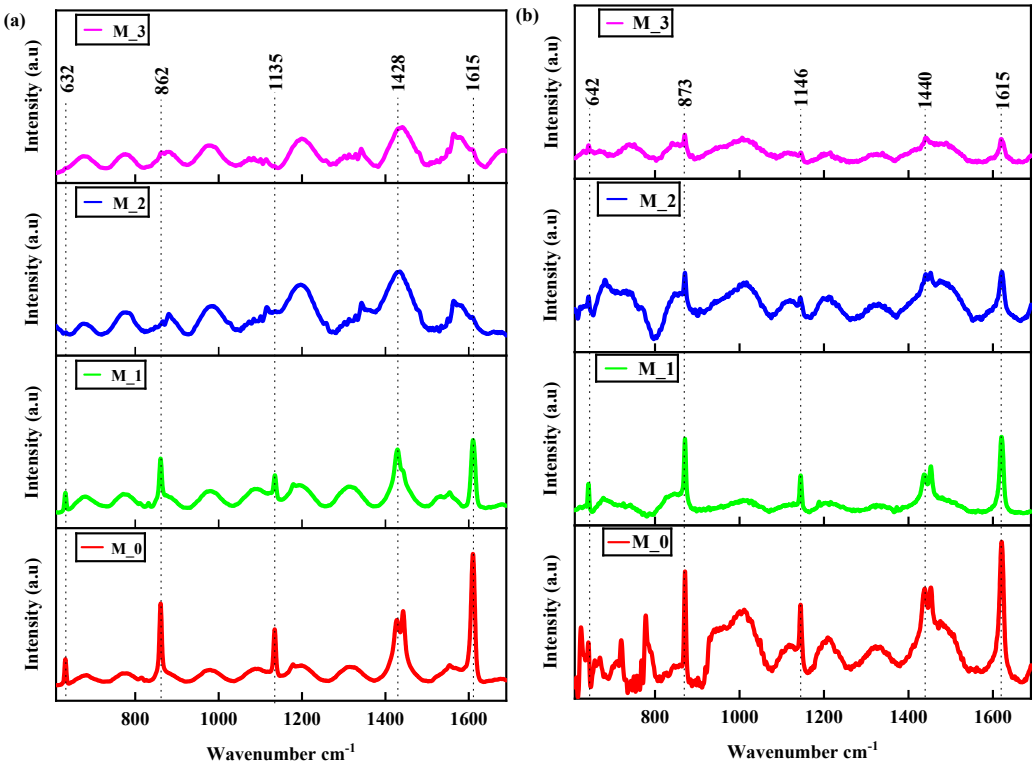


Fig. S5 RAMAN spectra of pure and doped samples (a) using 532 nm, (b) using 633nm

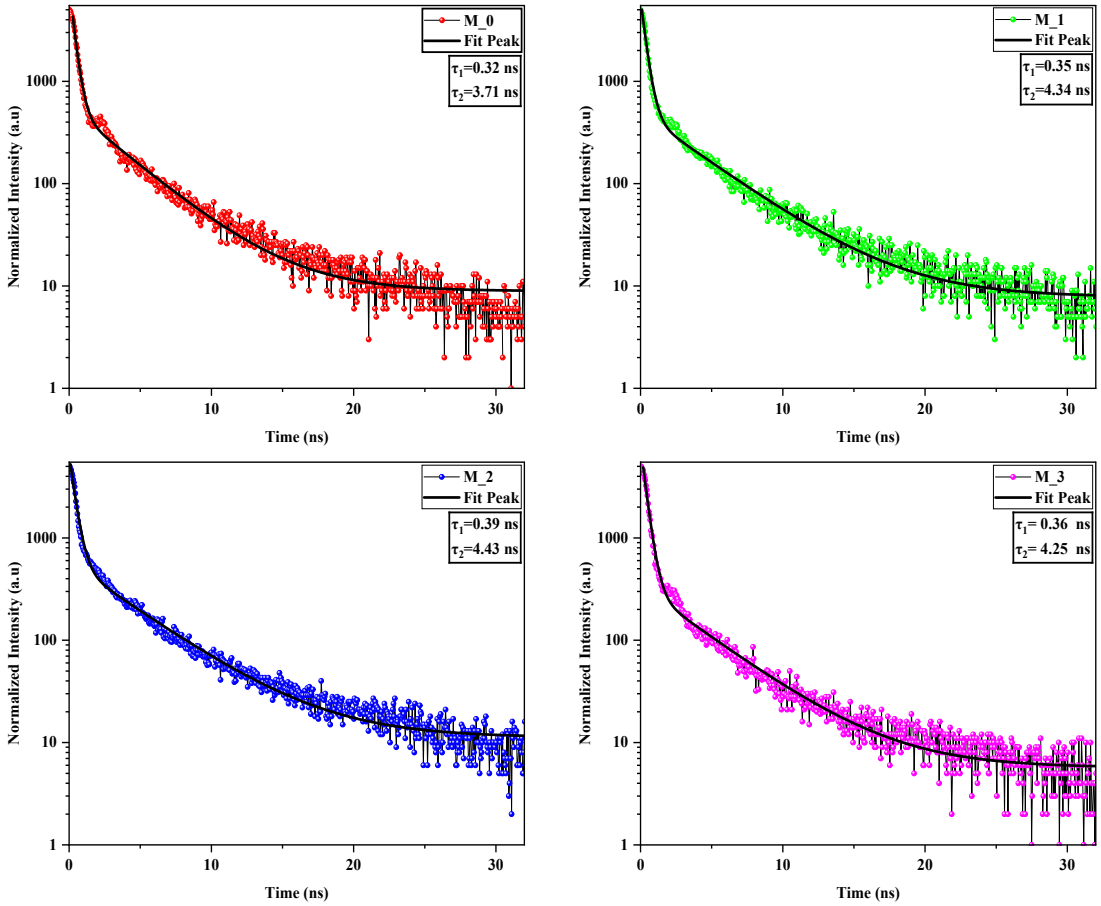


Fig. S6 TR-PL Spectra of the pure and doped MOF-5 samples

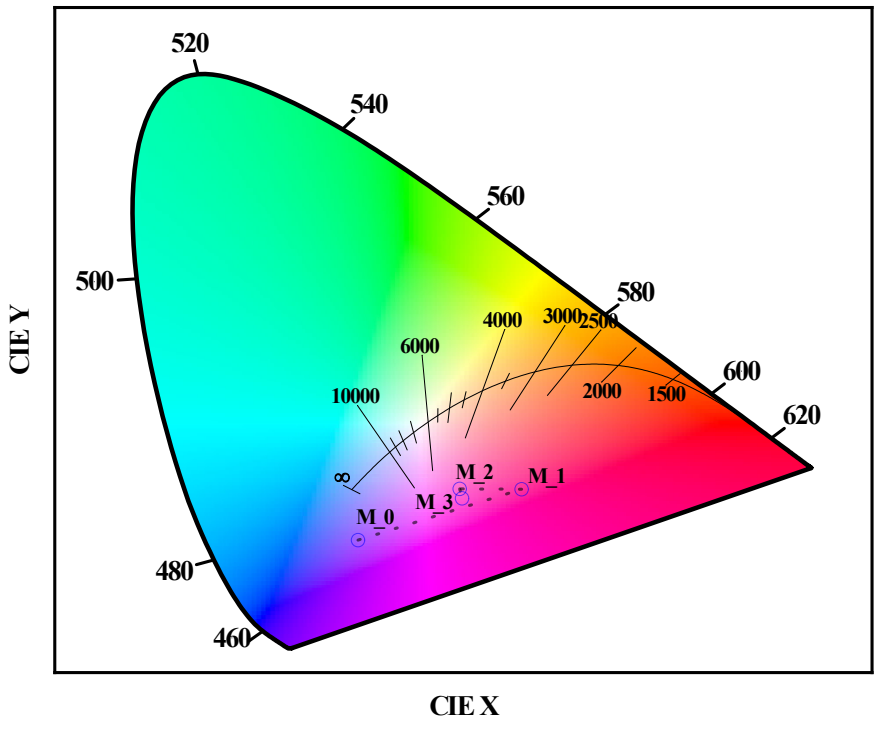


Fig. S7 CIE diagram of pure and doped samples