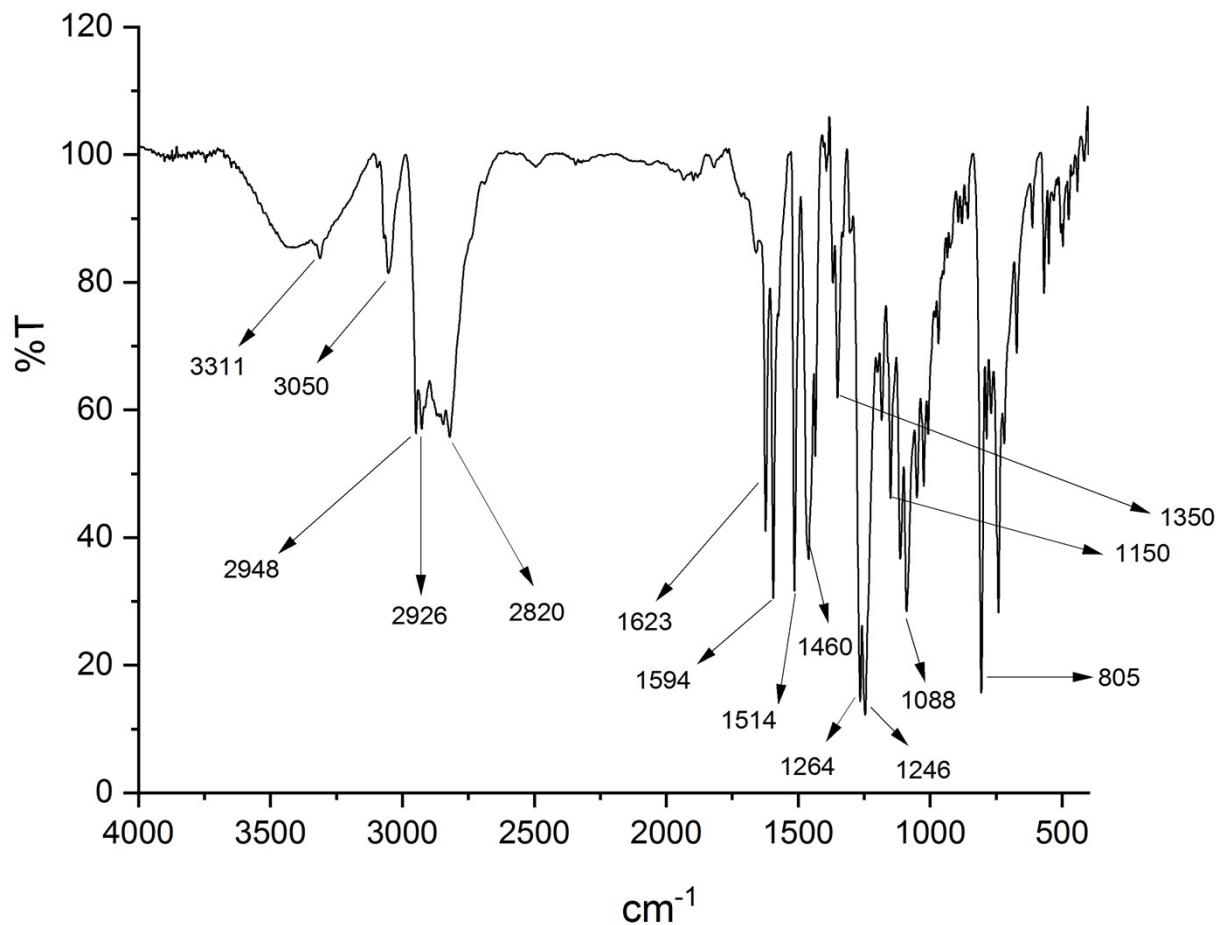


A new aza-crown macrocyclic fluorescence chemosensor ( $\text{N}_3\text{O}_2$  donor atoms) for magnesium ions in aqueous ethanol solution

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**Fig. S1.** IR spectrum of L

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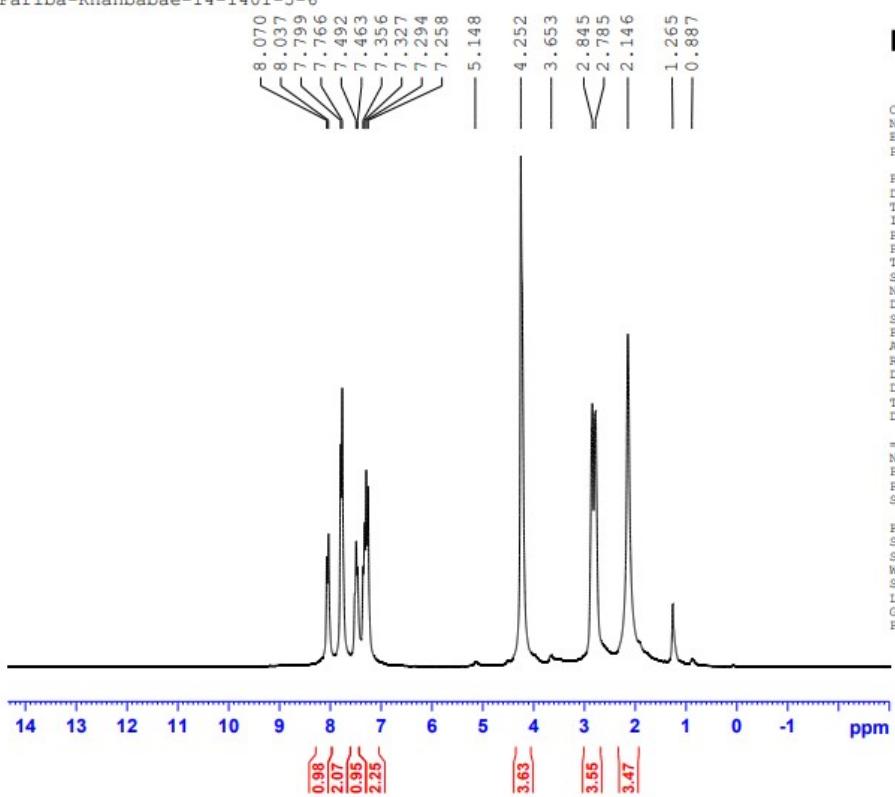


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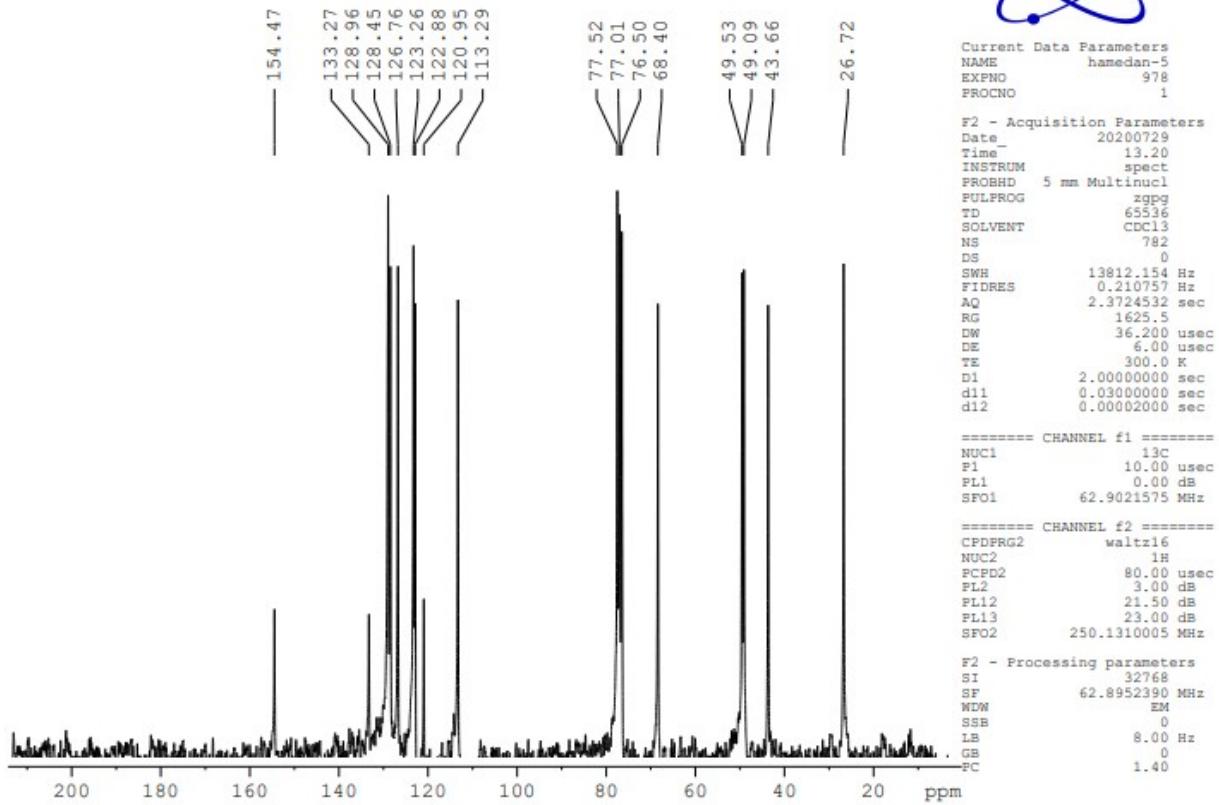
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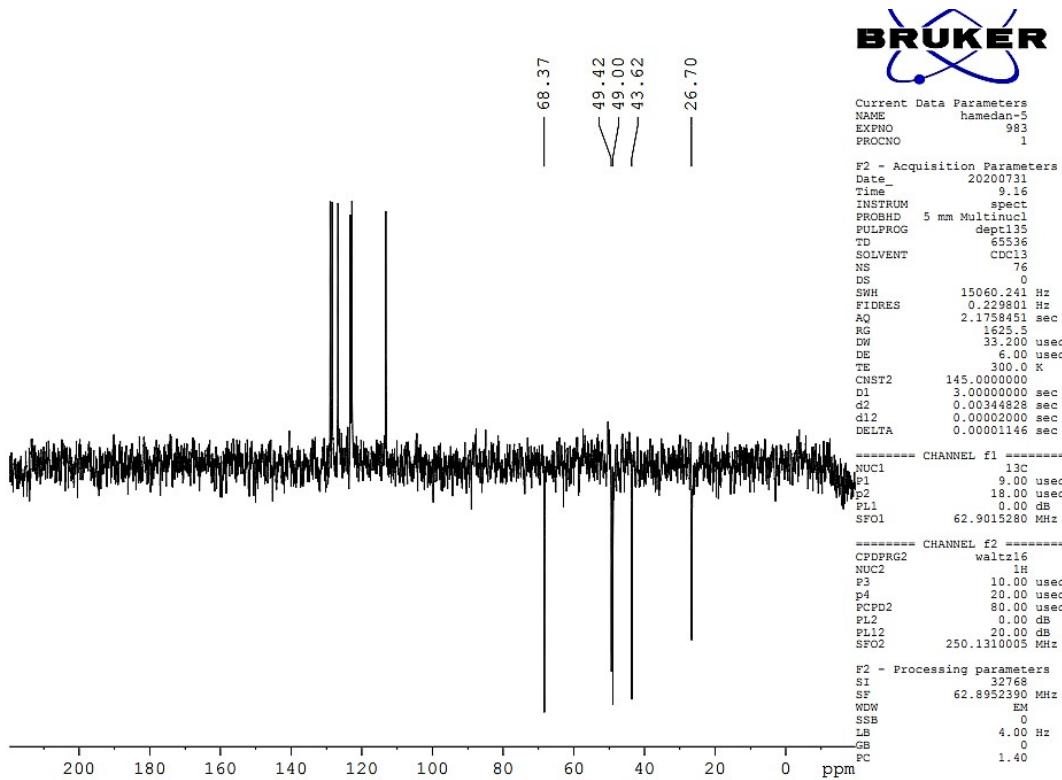
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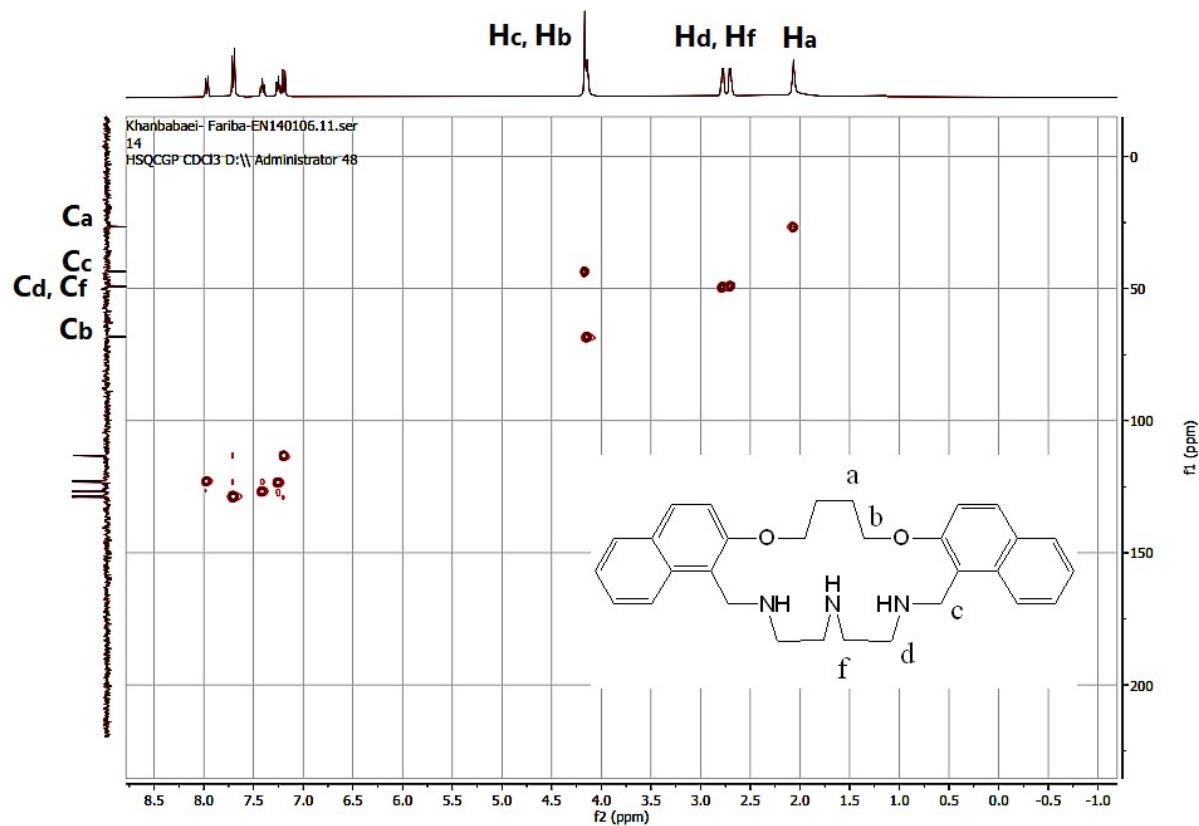
**Fig. S2.**  $^1\text{H}$ NMR spectrum of L in  $\text{CDCl}_3$ .



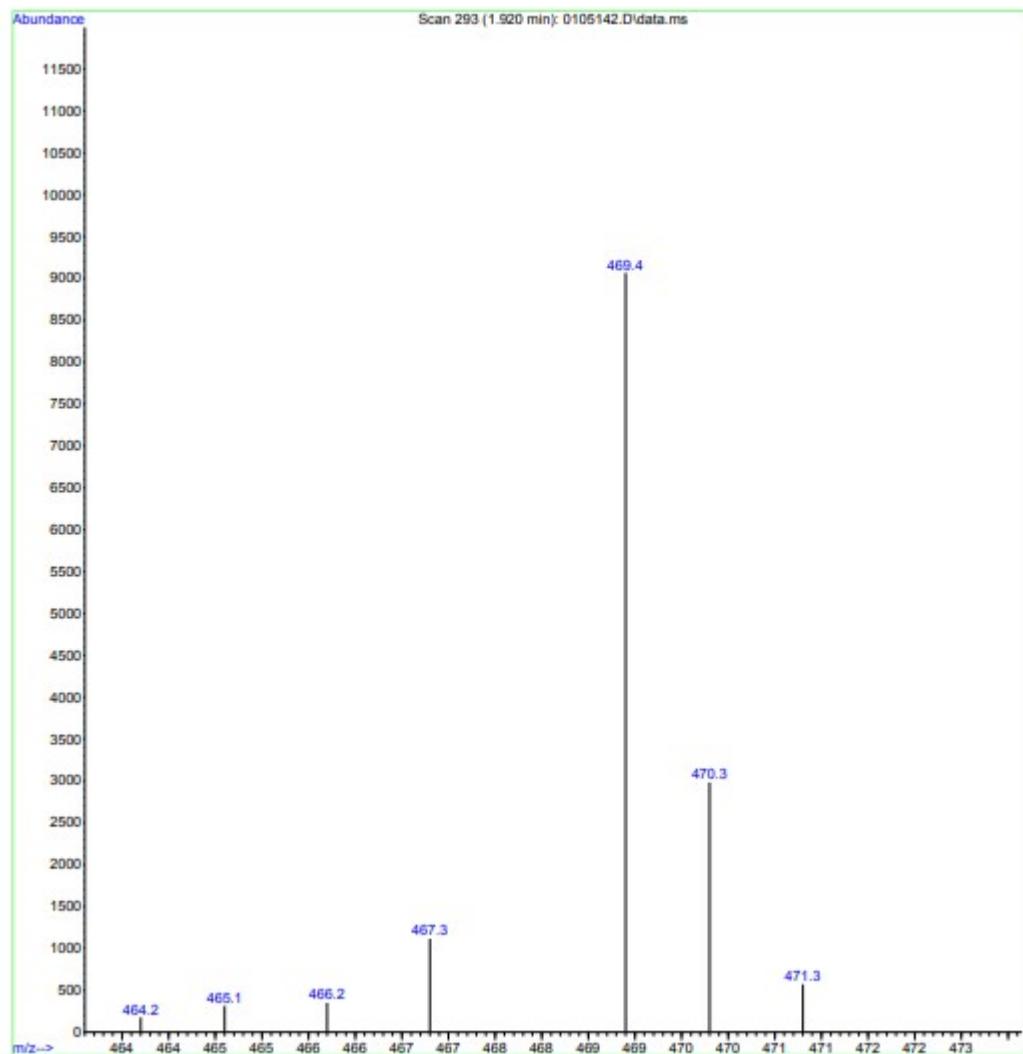
**Fig. S3.**<sup>13</sup>CNMR spectrum of L in CDCl<sub>3</sub>.



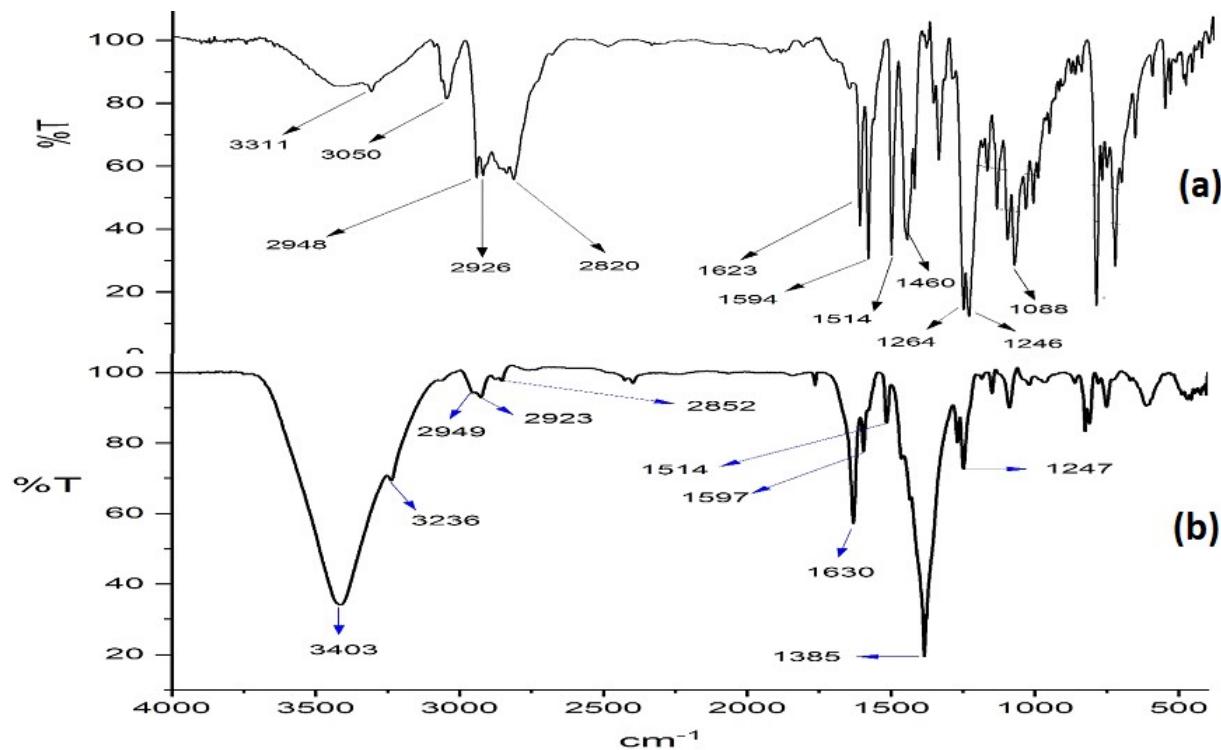
**Fig. S4.** DEPT spectrum of L in CDCl<sub>3</sub>.



**Fig. S5.** HSQCGP spectrum of L in CDCl<sub>3</sub> along with numbering scheme of the proton and carbon assignments for L.



**Fig. S6.** Mass spectrum of L



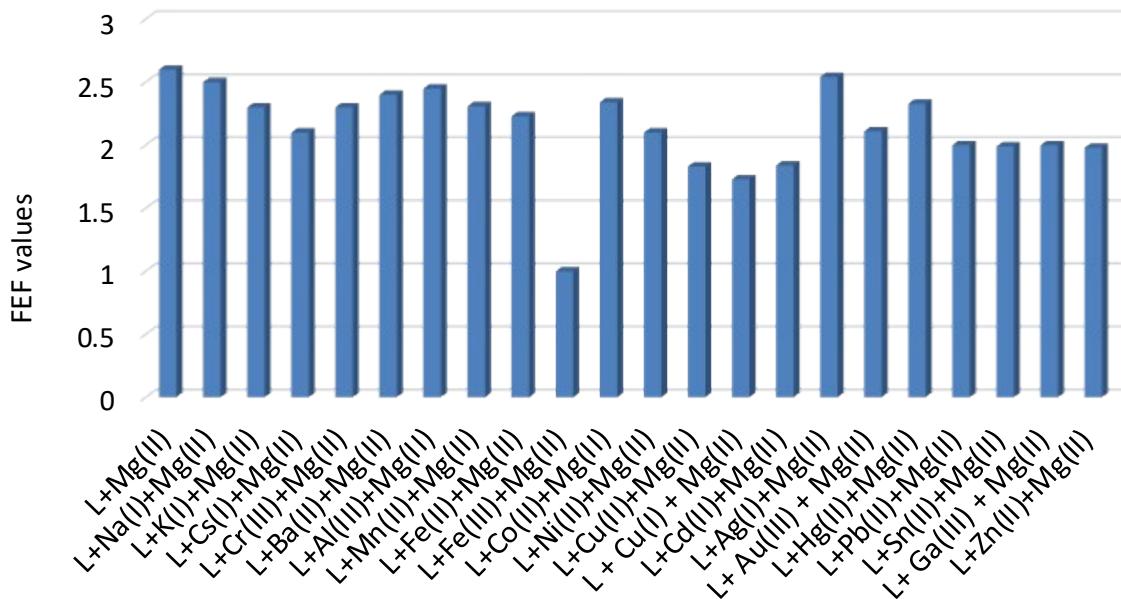
**Fig. S7.** IR spectra of L (a) L and (b)  $[\text{MgL}]^{2+}$

**Table S1.** Selected bond lengths ( $\text{\AA}$ ) and angles ( $^\circ$ ) for  $[\text{MgL}]^{2+}$  and L.

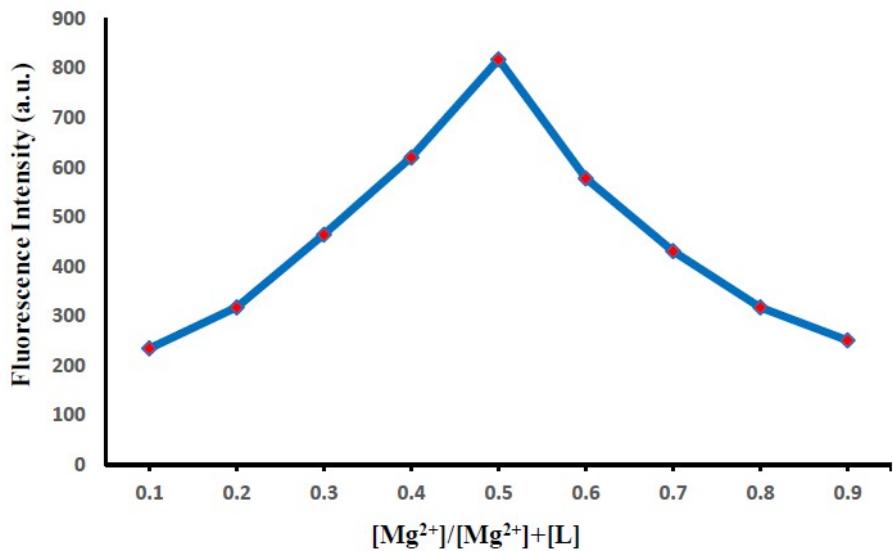
$[\text{MgL}]^{2+}$	L		
Bond length	( $\text{\AA}$ )	Distance	( $\text{\AA}$ )
Mg-O(1)	2.079	O(1)-N(1)	3.43
Mg-O(2)	2.110	O(1)-N(2)	5.16
Mg-N(1)	2.113	O(1)-N(3)	7.13
Mg-N(2)	2.200	O(2)-N(1)	5.76
Mg-N(3)	2.174	O(2)-N(2)	4.59
Bond angle	( $^\circ$ )	O(2)-N(3)	3.71
O(1)-Mg-O(2)	85.39	O(1)-O(2)	5.83

O(1)-Mg-N(1)	91.30	N(1)-N(2)	3.30
N(1)-Mg-N(2)	81.59	N(1)-N(3)	5.19
N(2)-Mg-N(3)	80.75	N(2)-N(3)	2.91
N(3)-Mg-O(2)	76.49		

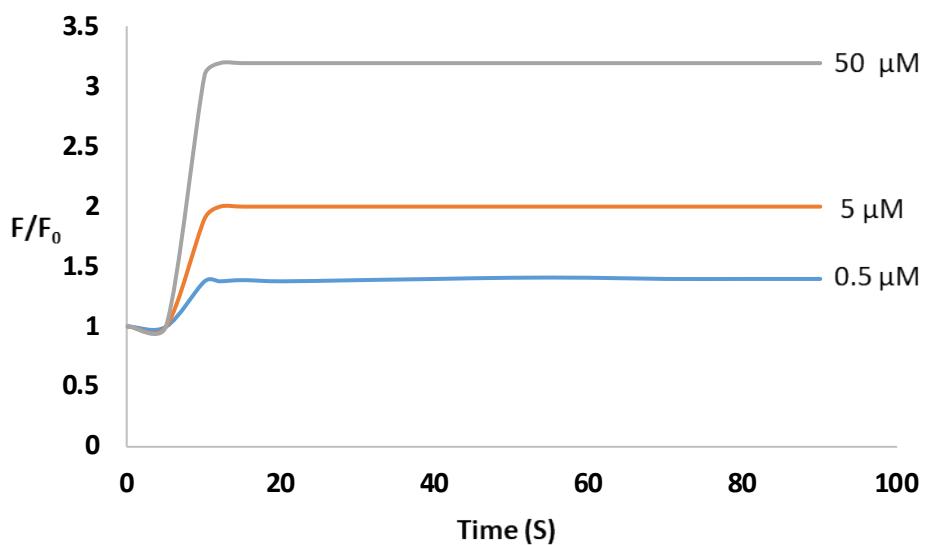
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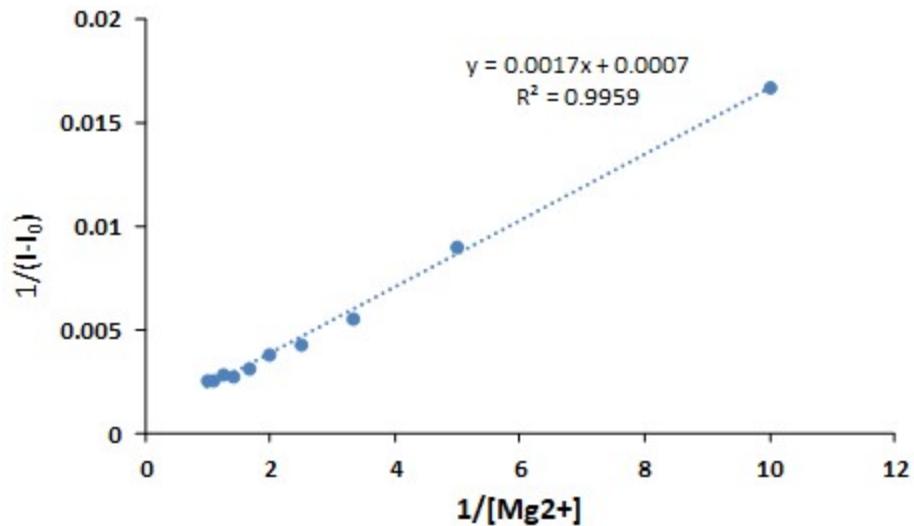
**Fig. S8.** The FEF value of ( $L + Mg^{2+}$ ) in the presence of various metal ions in EtOH–H<sub>2</sub>O solution (9:1, v/v) at room temperature.



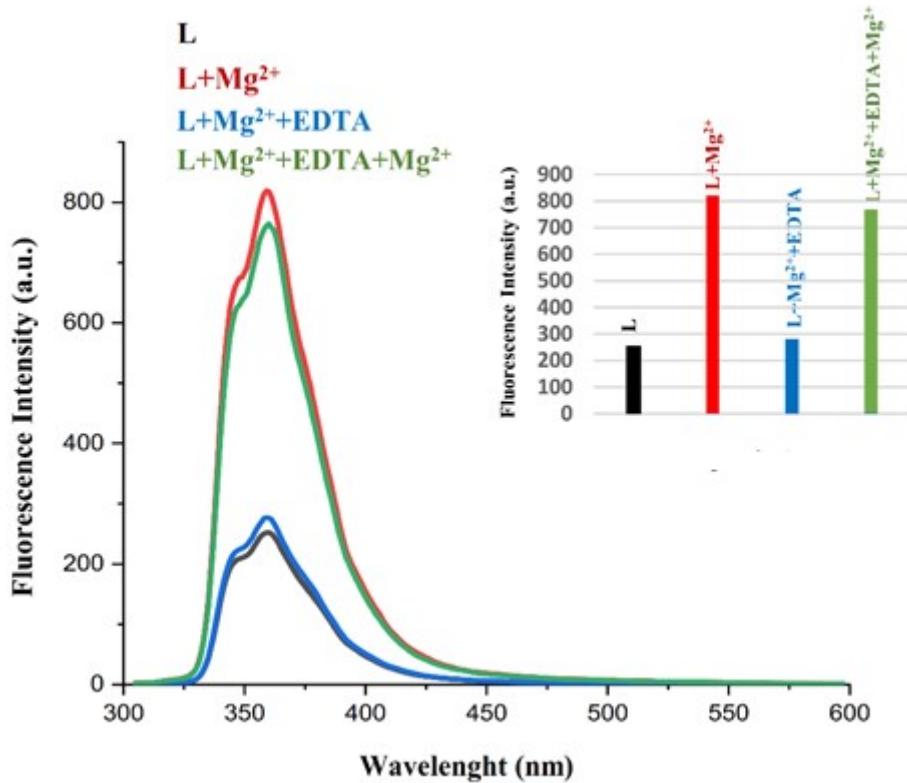
**Fig. S9.** Job's plot analysis of L and Mg<sup>2+</sup>.



**Fig. S10.** Kinetics of the fluorescence enhancement of L (10 μM) in the presence of different concentrations of Mg<sup>2+</sup>. Fluorescence intensity was recorded at 360 nm.



**Fig. S11.** Benesi-Hildebrand plot of L (10  $\mu$ M) with  $Mg^{2+}$  in EtOH/H<sub>2</sub>O (9:1, v/v) solution.



**Fig. S12.** Chemical reversibility behavior of the binding of L and  $[MgL]^{2+}$  ions. Fluorescence intensity was recorded at 360 nm.