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Structure and photoluminescence properties of a rare-earth free red-emitting Mn^{2+}-activated $KMgBO_3$

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Table S1 Lattice parameters and factional atomic site of $KMg_{0.91}Mn_{0.09}BO_3$

lattice	a=6.8494(1) Å		V=321.33(1) Å3		
atom	**site**	**x**	**y**	**z**	**Occ.**
K	4a	0.1332(3)	0.1332(1)	0.1332(2)	1.0000
Mg	4a	0.8543(2)	0.8543(2)	0.8543(1)	0.9153
Mn	4a	0.8543(2)	0.8543(2)	0.8543(1)	0.0847
B	12b	0.3997(2)	0.3997(2)	0.3997(2)	1.0000
O	4a	0.4152(1)	0.2576(1)	0.5373(2)	1.0000

Table S2 Fractional bond length and angle of $KMg_{0.91}Mn_{0.09}BO_3$

Bonds	**Distances(Å)**	**Bonds**	**Distances(Å)**	**Bonds**	**Distances(Å)**
K-O^{c}	2.8066(2)	Mg(Mn)-O^{b}	2.0977(1)	B-O	1.3594(2)
K-O^{g}	2.8066(2)	Mg(Mn)-O^{f}	2.0977(1)	B-O^{d}	1.3594(2)
K-O^{k}	2.8066(2)	Mg(Mn)-O^{j}	2.0977(1)	B-O^{h}	1.3594(2)
K-O^{a}	2.7764(1)	Mg(Mn)-O^{g}	2.1561(2)	O-B-O^{d}	119.898(1)
K-O^{e}	2.7764(1)	Mg(Mn)-O^{c}	2.1561(2)	O-B-O^{h}	119.898(1)
K-O^{i}	2.7764(1)	Mg(Mn)-O^{k}	2.1561(2)	O^{d}-B-O^{h}	119.898(1)

(a) x,y,z; (b) -x+1/2,y,z; (c) x+1/2,-y,z; (d) -x,-y,z; (e) x,y+1/2,z+1/2; (f) -x+1/2,y+1/2,z+1/2; (g) x+1/2, -y+1/2,z+1/2; (h) -x,-y+1/2,z+1/2