

# Supplementary Materials: *In-Situ* Studies of Structure Transformation and Al Coordination of $\text{KAl}(\text{MoO}_4)_2$ during Heating by High Temperature Raman and $^{27}\text{Al}$ NMR Spectroscopies

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**Table S1.** The calcination process for preparing crystalline  $\text{KAl}(\text{MoO}_4)_2$ .

Heat Treatment	Parameter Settings of Temperature (K)	Dwell Time (min)	Crucible
1	593	120	
2	773	180	Pt
3	873	2400	

and then cooled slowly (0.24 K/min) to room temperature

**Table S2.** The heating process used to prepare amorphous  $\text{KAl}(\text{MoO}_4)_2$ .

Heat Treatment	Parameter Settings of Temperature (K)	Dwell time (min)	Crucible
1	593	120	
2	923	120	Pt
3	1173	240	

The melt was then quenched by the “hammer-and-anvil” technique (by liquid quenching between two metallic plates).



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