

**Spontaneous Formation of Crystalline Lithium Molybdate
from Solid Reagents at Room Temperature**

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Supplementary Information

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Figure S1 Observed (dots), calculated (top line) and difference (bottom line) X-ray powder diffraction patterns collected from (i) sample **B** and (ii) sample **D**. The tick marks indicate the allowed Bragg reflections. Sample **B** contains a small quantity of MoO_3 and the reflections due to this phase are represented by the upper set of marks.

Figure S2 Thermal gravimetric data showing the variation in mass as a function of temperature for sample **A** of Li_2MoO_4 heated under a dynamic atmosphere of dry helium. The mass and temperature are indicated by continuous and broken lines respectively.

Figure S3 Calorimetric data collected on heating a 2:1 mixture of $\text{LiOH}\cdot\text{H}_2\text{O}$ and MoO_3 from $-80\text{ }^\circ\text{C}$ to $250\text{ }^\circ\text{C}$. The sample was heated at a rate of $5\text{ }^\circ\text{C min}^{-1}$ to $3\text{ }^\circ\text{C}$. This temperature was maintained for a period of 100 minutes before heating the mixture to $250\text{ }^\circ\text{C}$ at $5\text{ }^\circ\text{C min}^{-1}$. The heat flow is indicated by the continuous line and positive and negative values indicate exo- and endothermic processes respectively. The temperature is indicated by a broken line.

Figure S4 Calorimetric data collected from (i) $\text{LiOH}\cdot\text{H}_2\text{O}$ and (ii) MoO_3 heated from -80 to $200\text{ }^\circ\text{C}$ at $1\text{ }^\circ\text{C min}^{-1}$ under a dynamic atmosphere of dry air. The heat flow is indicated by the continuous line and positive and negative values indicate exo- and endothermic processes respectively. The temperature is indicated by a broken line.

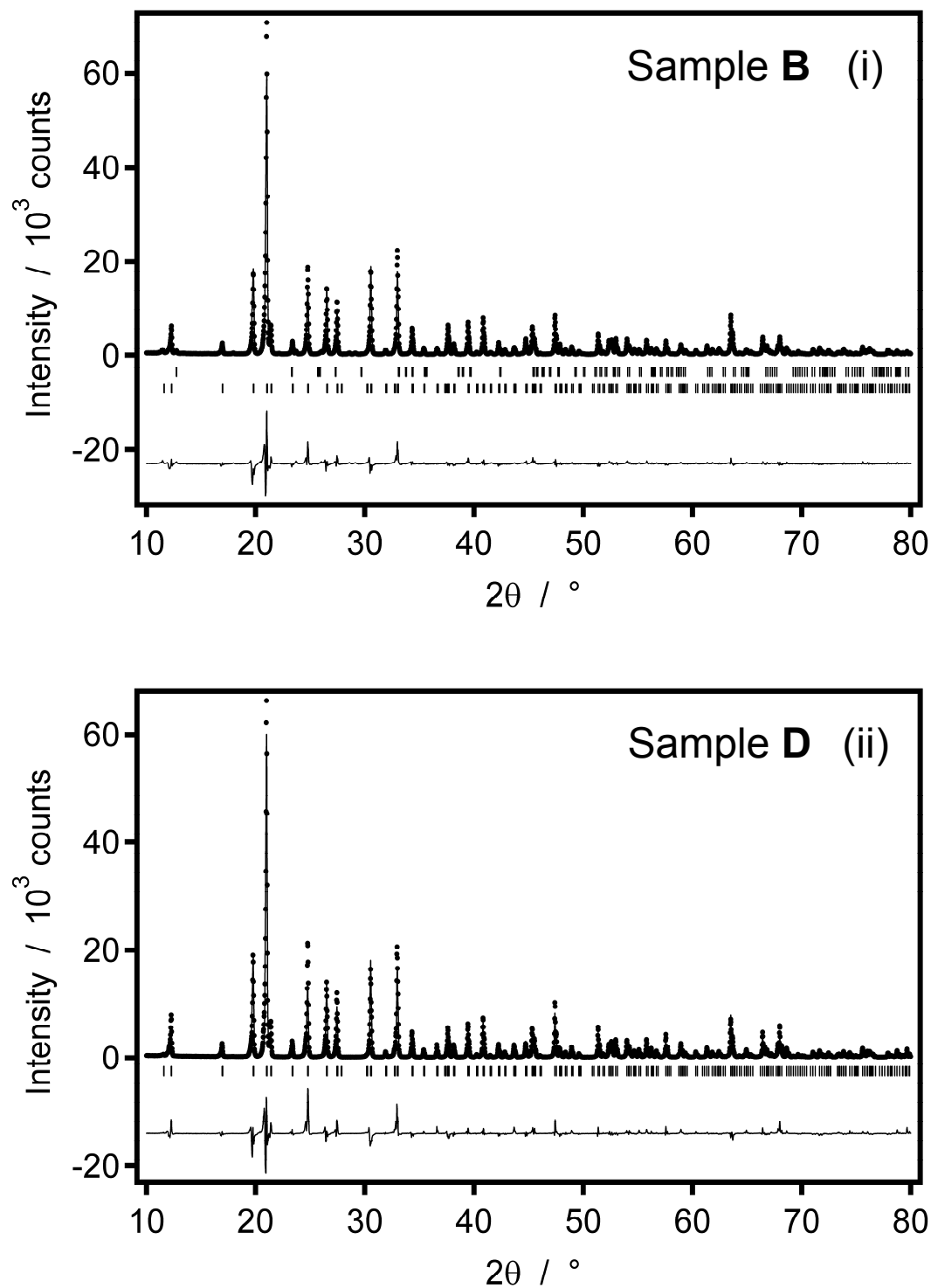


Figure S1

Observed (dots), calculated (top line) and difference (bottom line) X-ray powder diffraction patterns collected from (i) sample **B** and (ii) sample **D**. The tick marks indicate the allowed Bragg reflections. Sample **B** contains a small quantity of MoO₃ and the reflections due to this phase are represented by the upper set of tick marks.

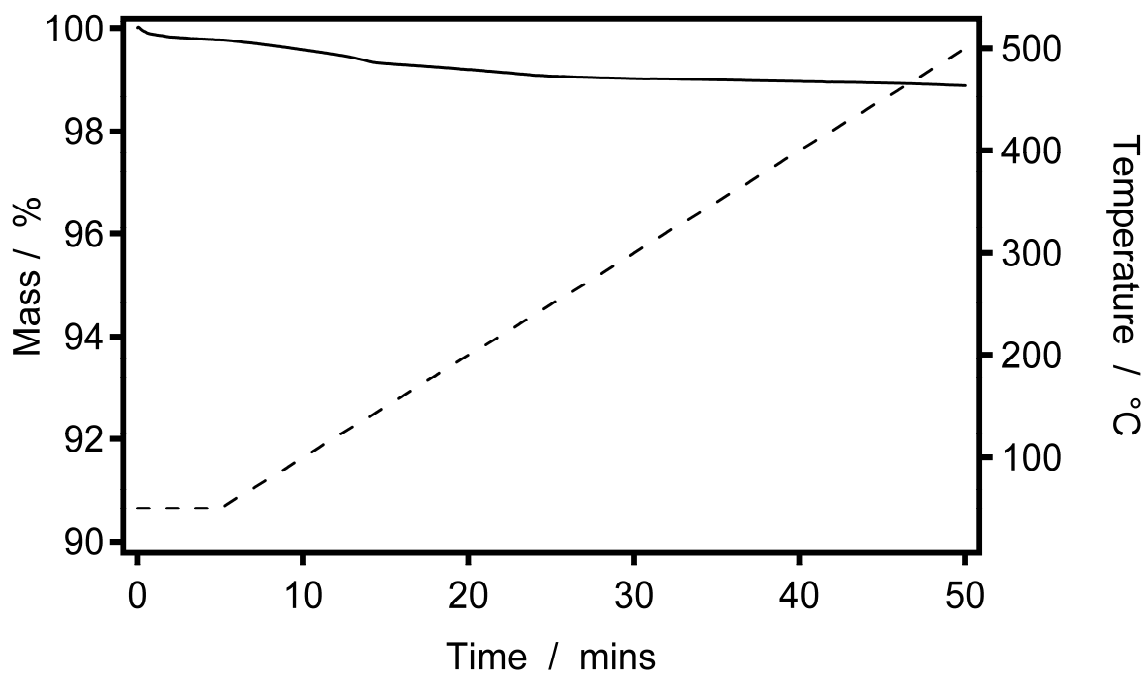


Figure S2

Thermal gravimetric data showing the variation in mass as a function of temperature for sample **A** of Li_2MoO_4 heated under a dynamic atmosphere of dry helium. The mass and temperature are indicated by continuous and broken lines respectively.

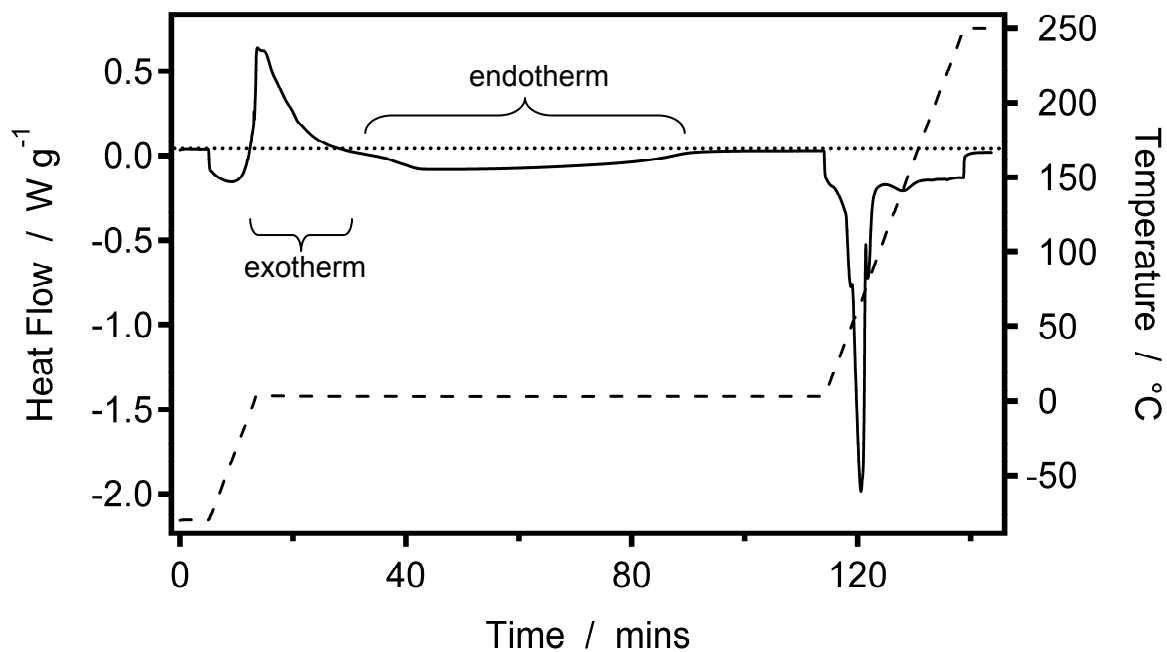


Figure S3

Calorimetric data collected on heating a 2:1 mixture of $\text{LiOH}\cdot\text{H}_2\text{O}$ and MoO_3 from $-80\text{ }^\circ\text{C}$ to $250\text{ }^\circ\text{C}$. The sample was heated at a rate of $5\text{ }^\circ\text{C min}^{-1}$ to $3\text{ }^\circ\text{C}$. This temperature was maintained for a period of 100 minutes before heating the mixture to $250\text{ }^\circ\text{C}$ at $5\text{ }^\circ\text{C min}^{-1}$. The heat flow is indicated by the continuous line and positive and negative values indicate exo- and endothermic processes respectively. The temperature is indicated by a broken line.

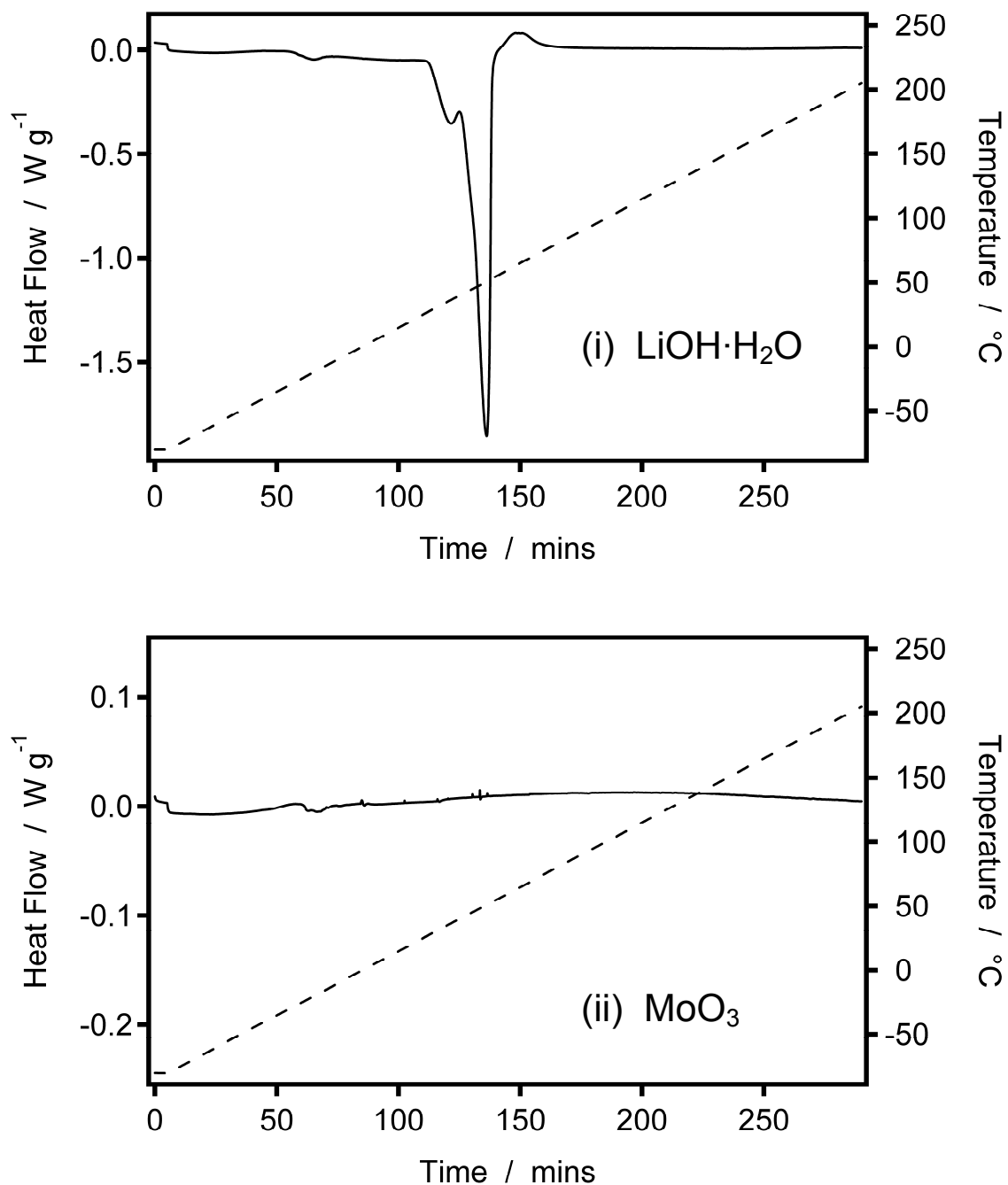


Figure S4

Calorimetric data collected from (i) LiOH·H₂O and (ii) MoO₃ heated from -80 to 200 °C at 1 °C min⁻¹ under a dynamic atmosphere of dry air. The heat flow is indicated by the continuous line and positive and negative values indicate exo- and endothermic processes respectively. The temperature is indicated by a broken line.