

Electronic Supporting Information (non-CIF) Dalton b50466a

**Synthesis and structure of the framework scandium methylphosphonates
ScF(H₂O)MePO₃ and NaSc(CH₃PO₃)₂·0.5H₂O**

Stuart R. Miller,¹ Emily Lear,¹ Jorge Gonzalez,¹ Alexandra M. Z. Slawin,¹ Paul A. Wright,¹ Nathalie Guillou,² Gérard Férey²

Supplementary Figure 1.

XRD of unsolved ScMePO- α structure prepared from a gel of composition Sc₂O₃ : CH₃PO₃H₂ : H₂O of 1 : 3 : 40 at 463 K. Scandium oxide peaks asterisked.

Supplementary Figure 2.

Matched powder XRD patterns of ScF(H₂O)CH₃PO₃.

Supplementary Figure 3.

³¹P MASNMR of NaSc(CH₃PO₃)₂ · 0.5H₂O

Supplementary Figure 4.

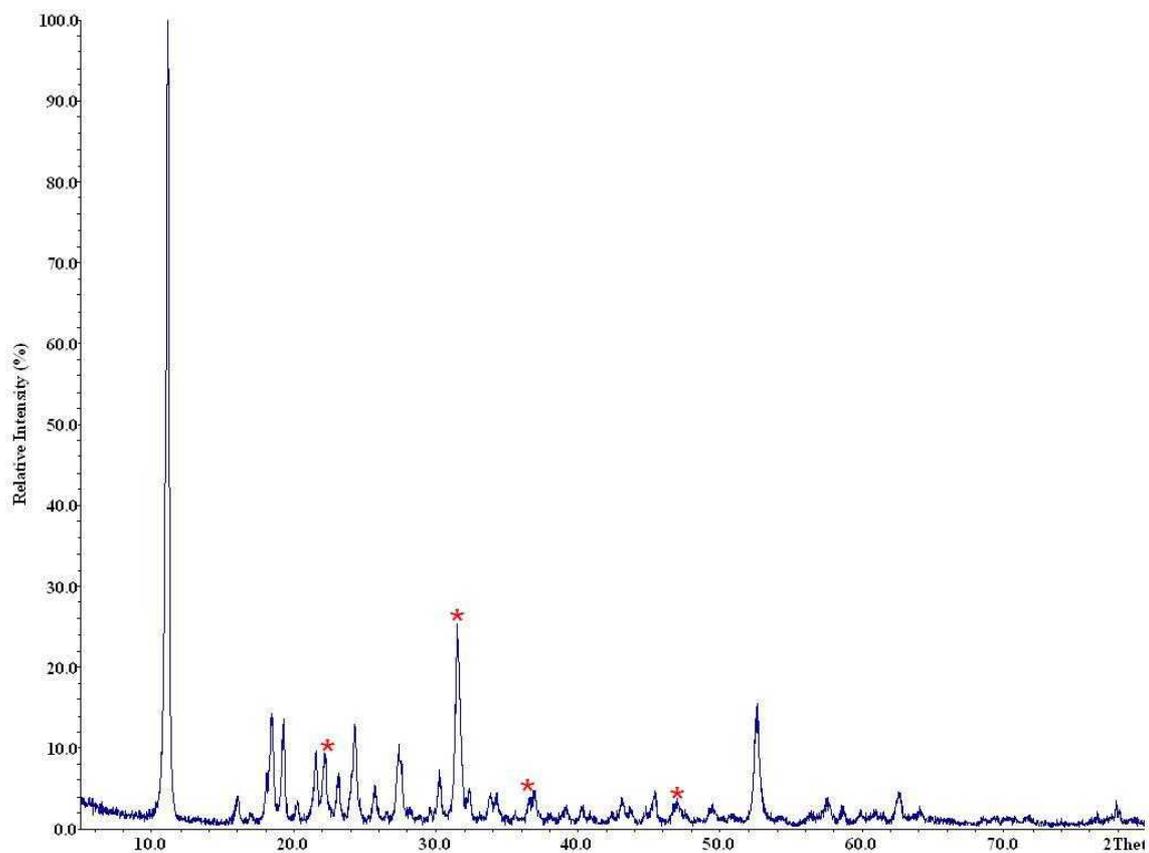
Matched powder XRD of pure NaSc(CH₃PO₃)₂ · 0.5H₂O

Supplementary Figure 5.

Wideline ²H NMR spectra of perdeuterated sodium scandiummethylphosphonate at a) 273 K and b) 123 K. Both spectra are uniaxial powder patterns with sharp singularities at ± 21 kHz, indicating that the methyl group undergoes rotations in the fast limit of motion over the temperature range 123 - 273 K.

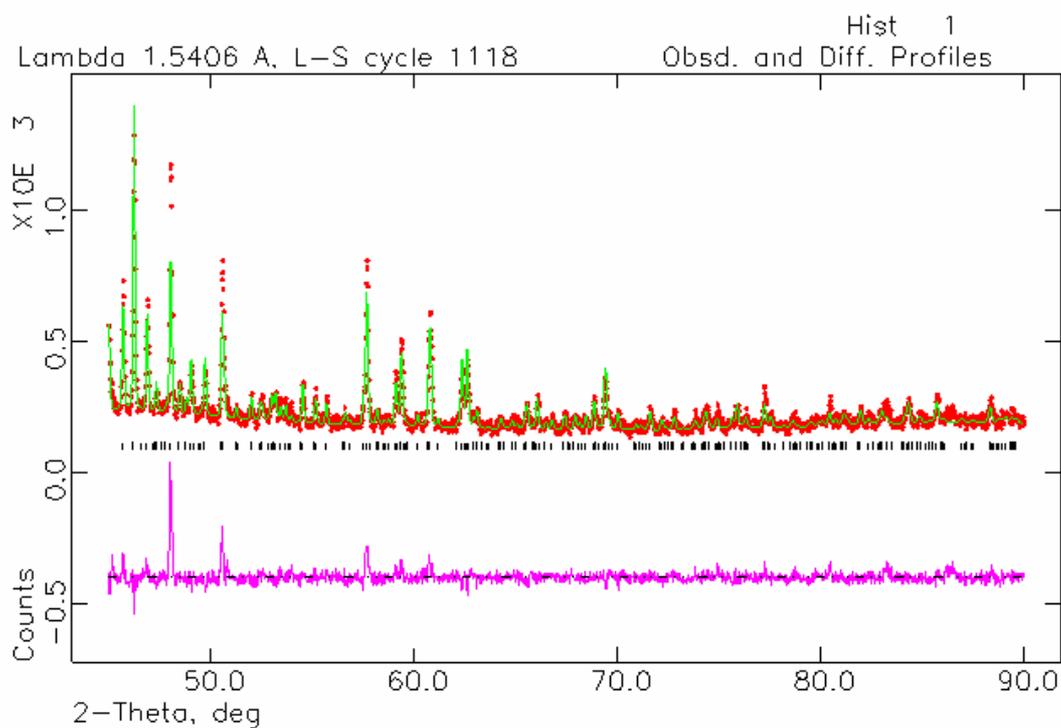
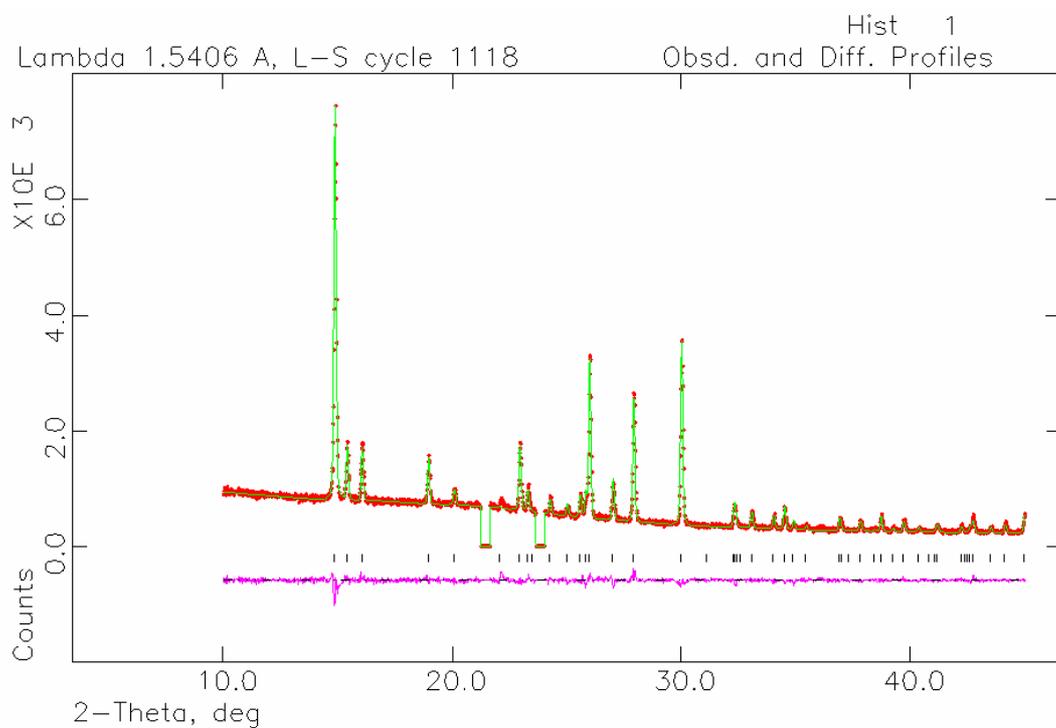
Supplementary Figure 1.

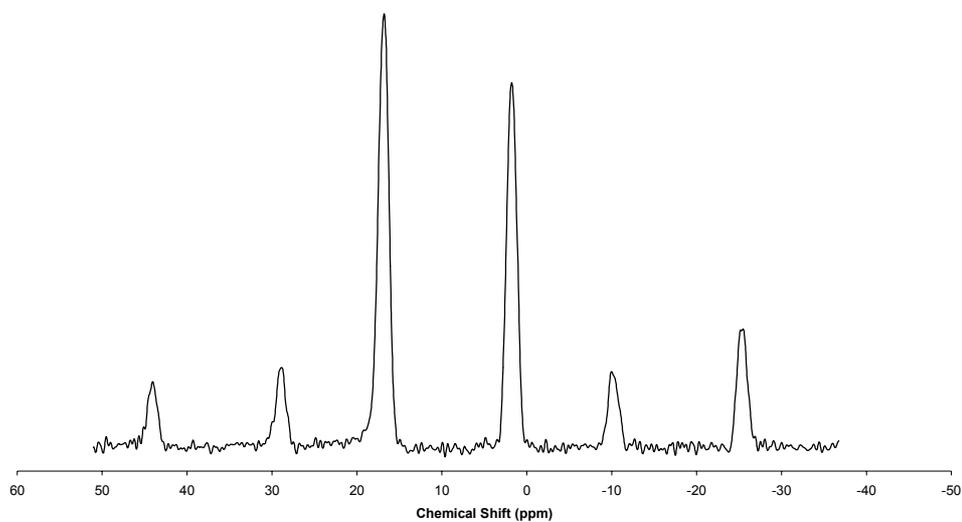
XRD of unsolved ScMePO- α structure prepared from a gel of composition Sc_2O_3 : $\text{CH}_3\text{PO}_3\text{H}_2$: H_2O of 1 : 3 : 40 at 463 K. Scandium oxide peaks asterisked.



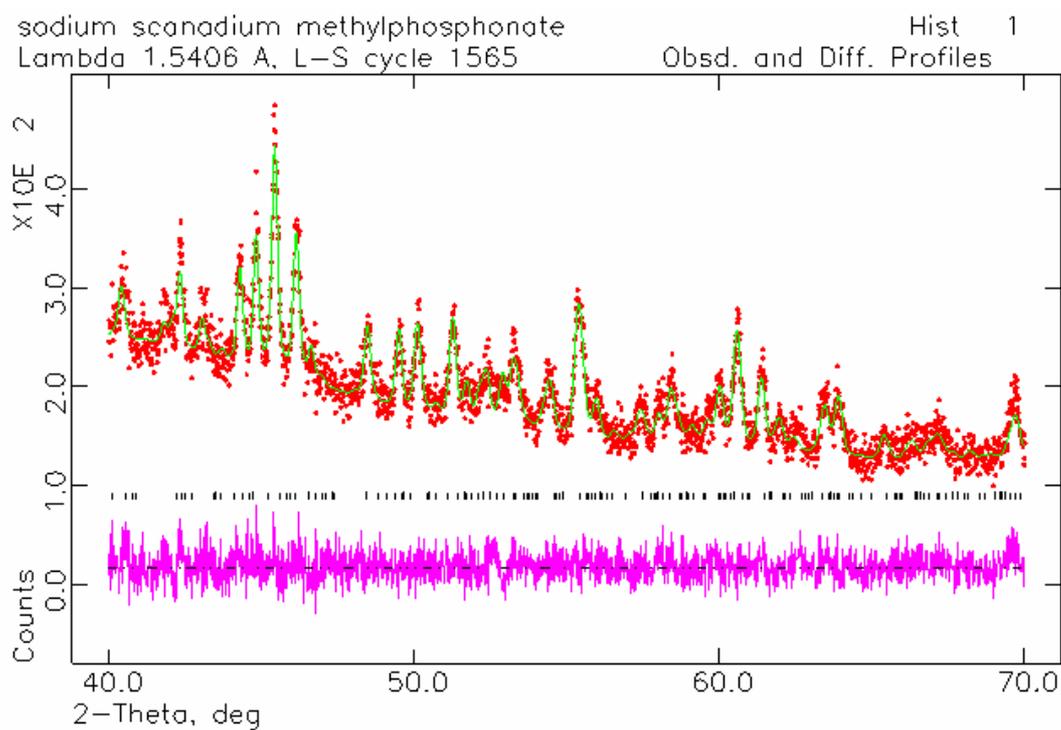
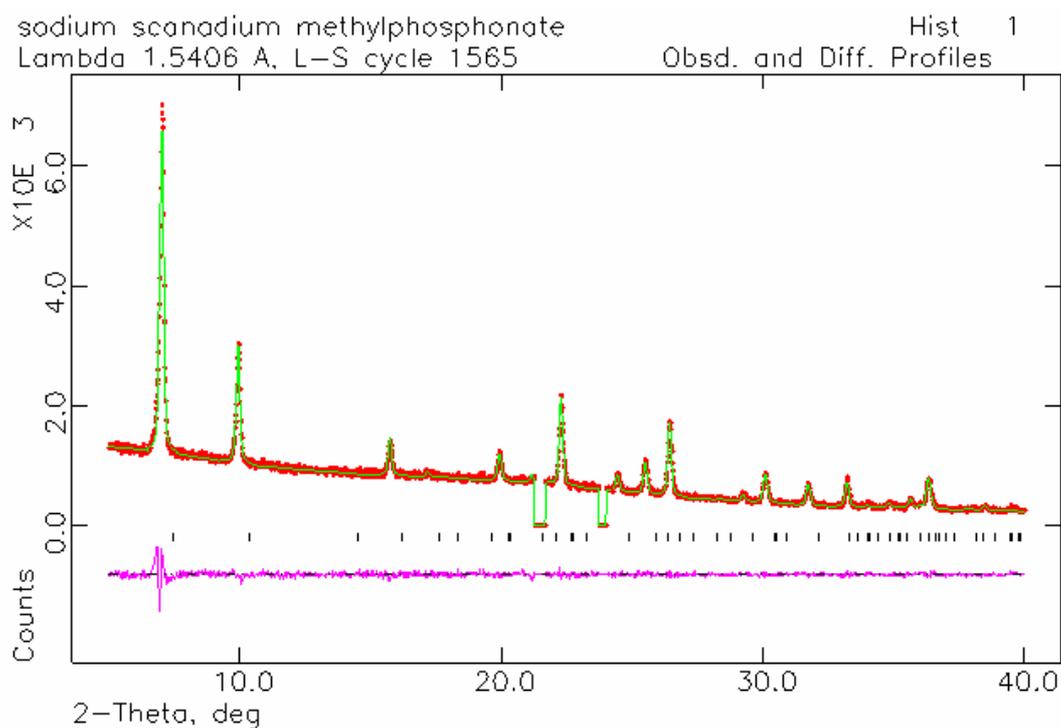
Supplementary Figure 2.

Matched powder XRD patterns of $\text{ScF}(\text{H}_2\text{O})\text{CH}_3\text{PO}_3$. Peaks from diffractometer excluded





Supplementary Figure 3. ^{31}P MASNMR of $\text{NaSc}(\text{CH}_3\text{PO}_3)_2 \cdot 0.5\text{H}_2\text{O}$



Supplementary Figure 4.

Matched powder XRD of pure $\text{NaSc}(\text{CH}_3\text{PO}_3)_2 \cdot 0.5\text{H}_2\text{O}$

Supplementary Figure 5.

Wideline ^2H NMR spectra of perdeuterated sodium scandiummethylphosphonate at a) 273 K and b) 123 K. Both spectra are uniaxial powder patterns with sharp singularities at ± 21 kHz, indicating that the methyl group undergoes rotations in the fast limit of motion over the temperature range 123 - 273 K.

