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Supporting Information

Molecular Networks

Created by Charge-Assisted Hydrogen Bonding

in Phosphonate, Phosphate, and Sulfonate Salts of Bis(amidines)

Sharon Lie, Thierry Maris, and James D. Wuest*

Département de Chimie, Université de Montréal, Montréal, Québec H3C 3J7

Canada

*Author to whom correspondence may be addressed. E-mail: james.d.wuest@umontreal.ca

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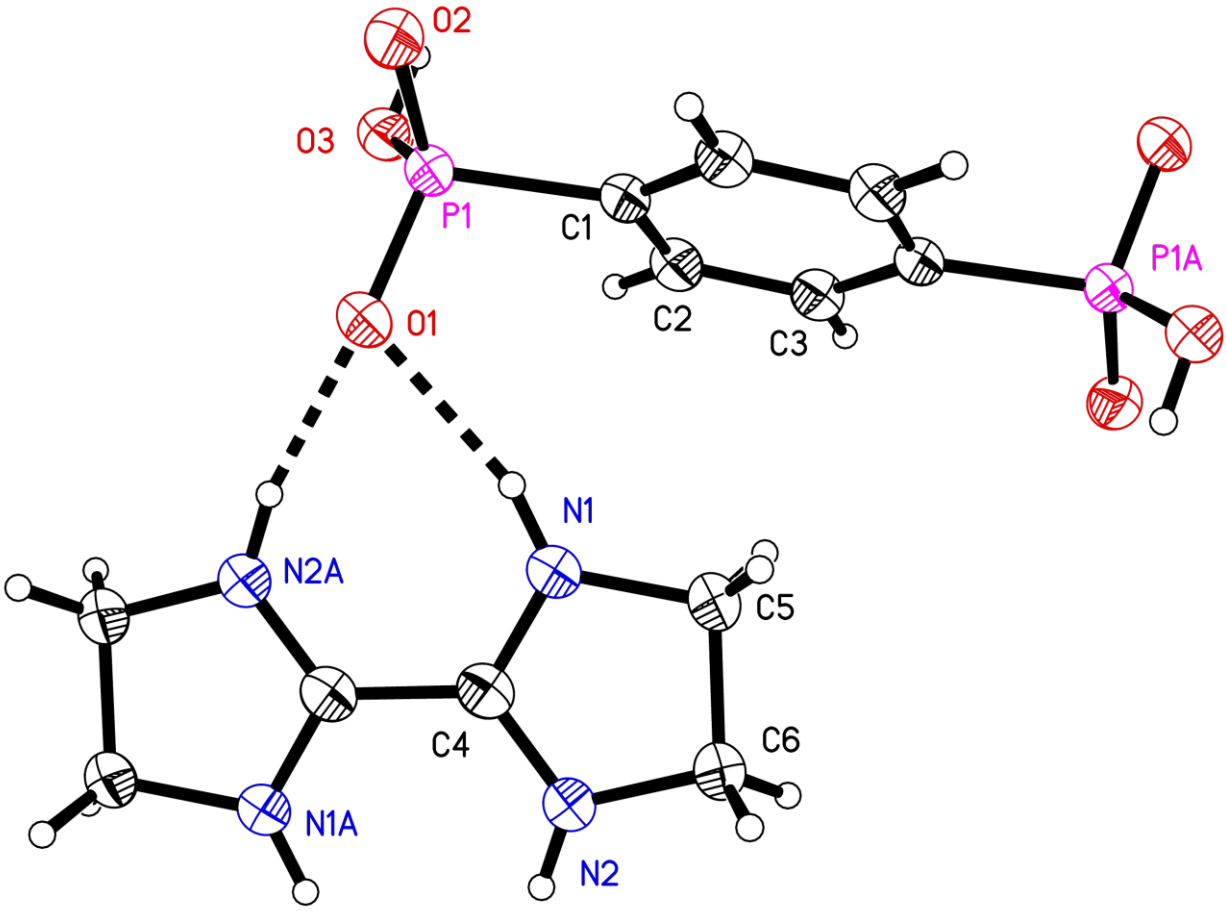

Figure S1. Thermal atomic displacement ellipsoid plot of the structure of crystals of (H_2**BI**$^{+2}$) (H_2**BDP**$^{-2}$) grown from DMSO. The ellipsoids of non-hydrogen atoms are drawn at the 50% probability level, and hydrogen atoms are represented by a sphere of arbitrary size. Hydrogen bonds are shown as dotted lines.

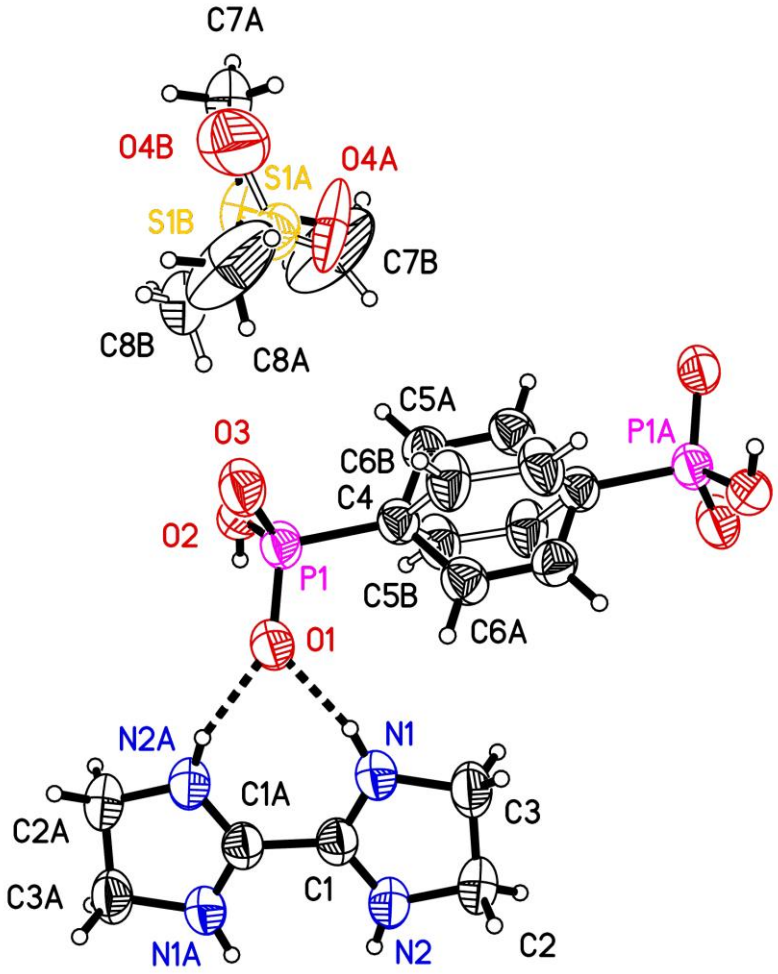

Figure S2. Thermal atomic displacement ellipsoid plot of the structure of crystals of (H_2**BI**$^{+2}$) (H_2**BDP**$^{-2}$) • 2DMSO grown from DMSO. The ellipsoids of non-hydrogen atoms are drawn at the 50% probability level, and hydrogen atoms are represented by a sphere of arbitrary size. Hydrogen bonds are shown as dotted lines. Atoms labeled with the suffix B are from the second part of the statistically disordered fragments.

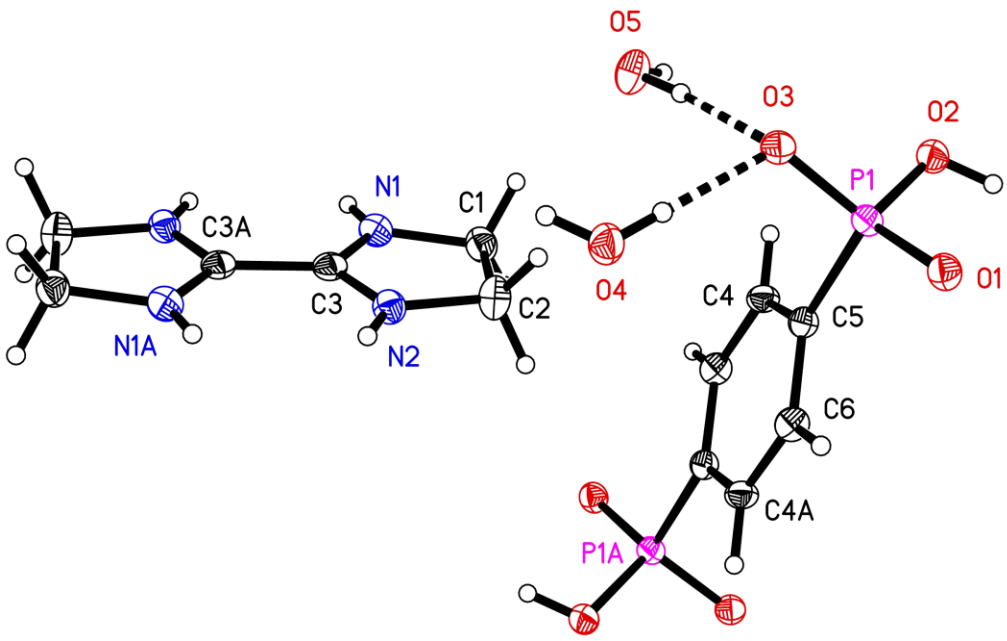

Figure S3. Thermal atomic displacement ellipsoid plot of the structure of crystals of (H_2**BI**$^{+2}$) (H_2**BDP**$^{-2}$) • 4H_2O grown from EtOH/H_2O. The ellipsoids of non-hydrogen atoms are drawn at the 50% probability level, and hydrogen atoms are represented by a sphere of arbitrary size. Hydrogen bonds are shown as dotted lines.

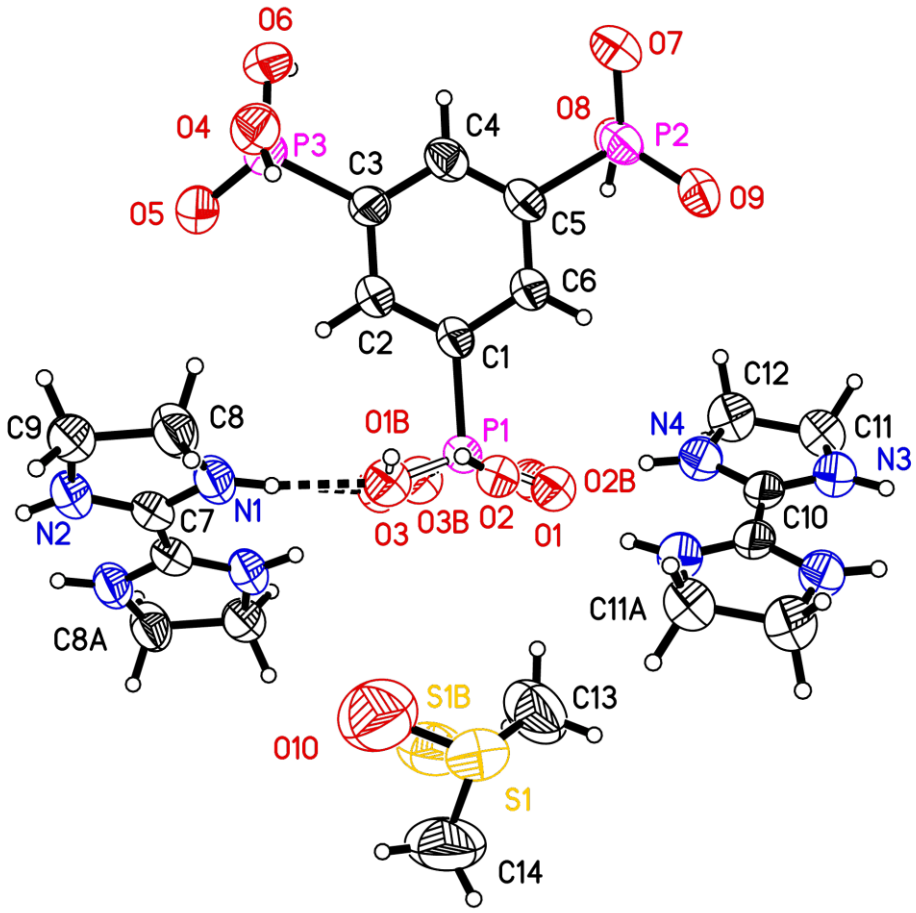

Figure S4. Thermal atomic displacement ellipsoid plot of the structure of crystals of (H_2**BI**$^{+2}$) (H_4**BTP**$^{-2}$) • DMSO grown from DMSO. The ellipsoids of non-hydrogen atoms are drawn at the 50% probability level, and hydrogen atoms are represented by a sphere of arbitrary size. Hydrogen bonds are shown as dotted lines. Atoms labeled with a suffix B are from the second part of the statistically disordered fragments.

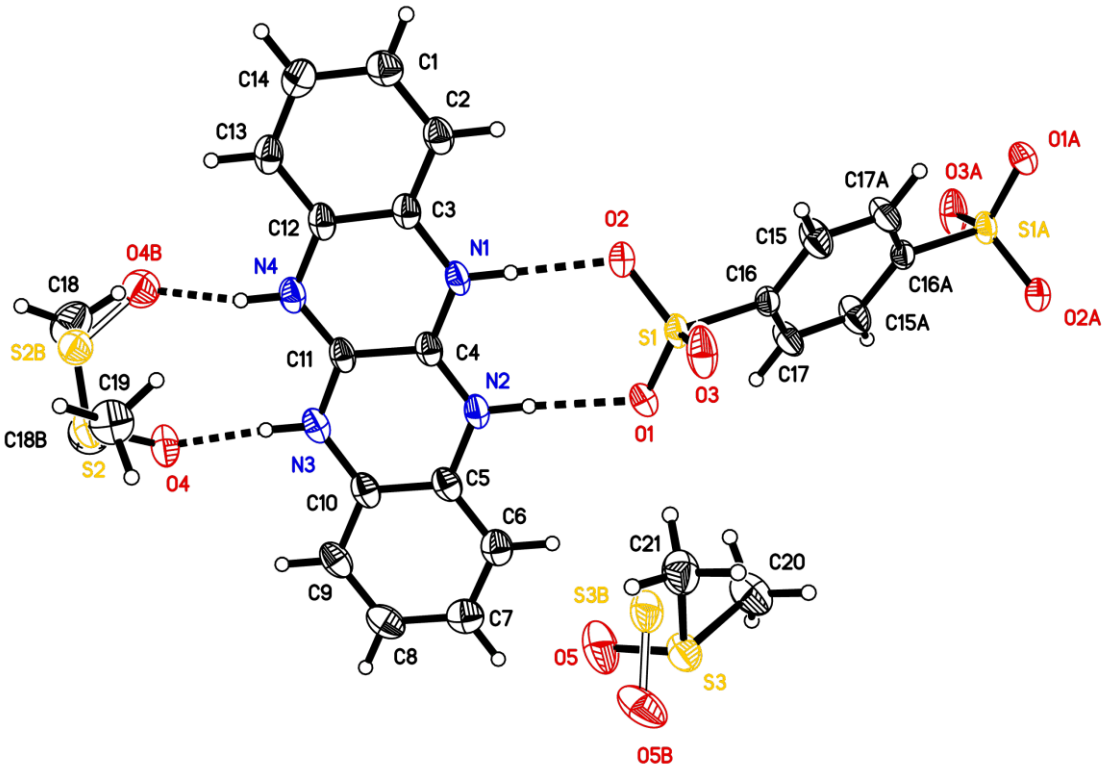

Figure S5. Thermal atomic displacement ellipsoid plot of the structure of crystals of (H**FF**$^{+}$)$_2$ (**BDS**$^{-2}$) • 4DMSO grown from DMSO. The ellipsoids of non-hydrogen atoms are drawn at the 50% probability level, and hydrogen atoms are represented by a sphere of arbitrary size. Hydrogen bonds are shown as dotted lines. Atoms labeled with the suffix A are symmetry-equivalent. Atoms labeled with the suffix B are from the second part of the statistically disordered fragments.

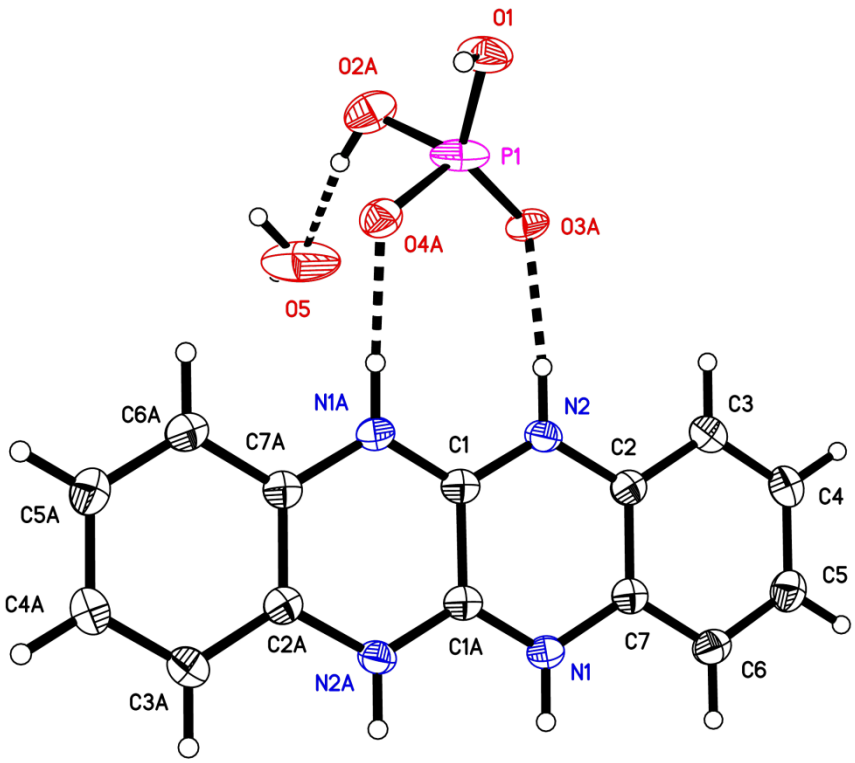

Figure S6. Thermal atomic displacement ellipsoid plot of the structure of crystals of (H_2**FF**$^{+2}$) $[PO_2(OH)_2^-]_2 \bullet H_2O$ grown from heptanoic acid. The ellipsoids of non-hydrogen atoms are drawn at the 50% probability level, and hydrogen atoms are represented by a sphere of arbitrary size. Hydrogen bonds are shown as dotted lines. Only one part of the disordered phosphate anion and water molecule is shown.

X-Ray Powder Diffraction

The experimental patterns were measured on a Bruker D8 Discover diffractometer at 295 K with copper radiation (CuKα, λ = 1.5418 Å). The calculated diffraction patterns were generated from the crystal structure at 100 K or 150 K using Mercury software (http://www.ccdc.cam.ac.uk/products/mercury/).

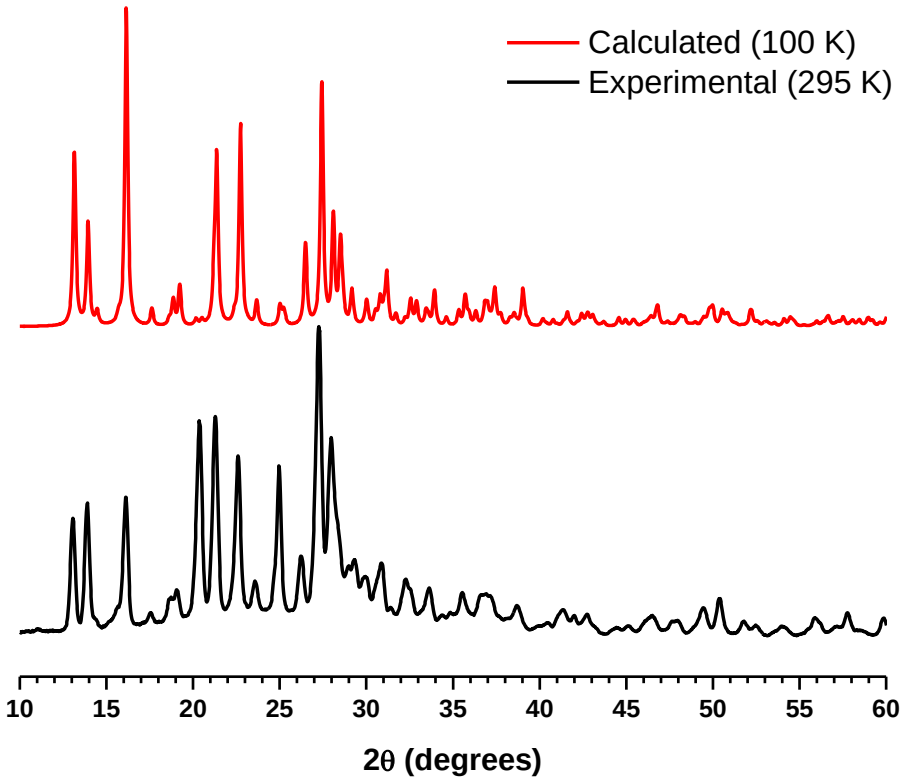

Figure S7. Comparison of calculated and experimental X-ray powder diffraction patterns for crystals of (H_2**BI**$^{+2}$) (H_2**BDP**$^{-2}$) • 4H_2O grown from EtOH/H_2O.

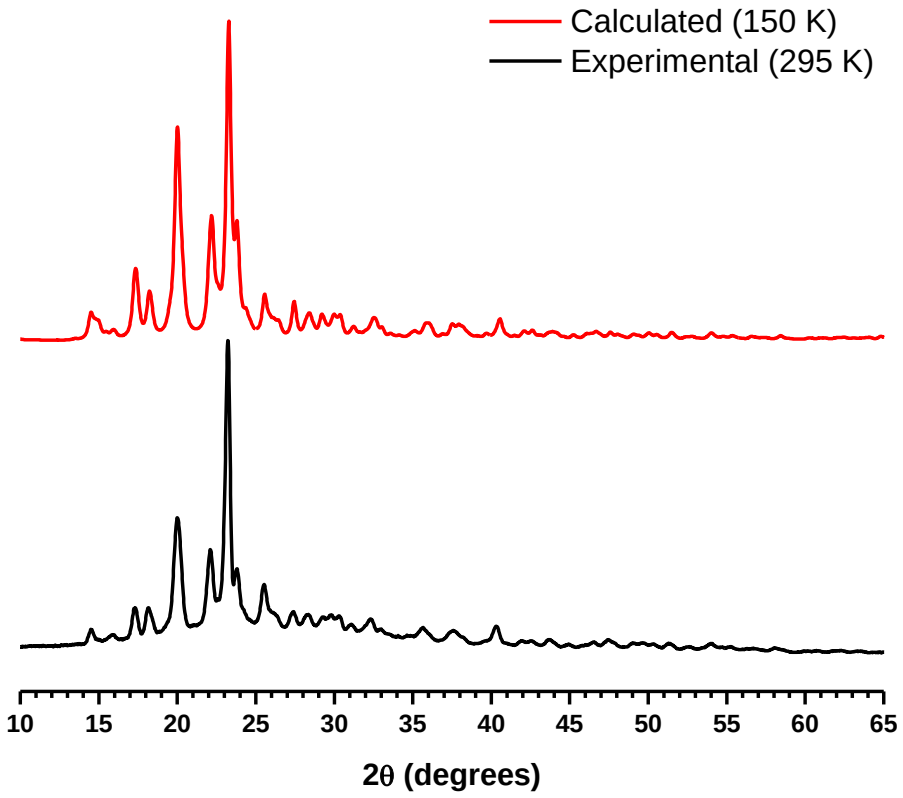

Figure S8. Comparison of calculated and experimental X-ray powder diffraction patterns for crystals of (H_2**BI**$^{+2}$) (H_4**BTP**$^{-2}$) • DMSO grown from DMSO.

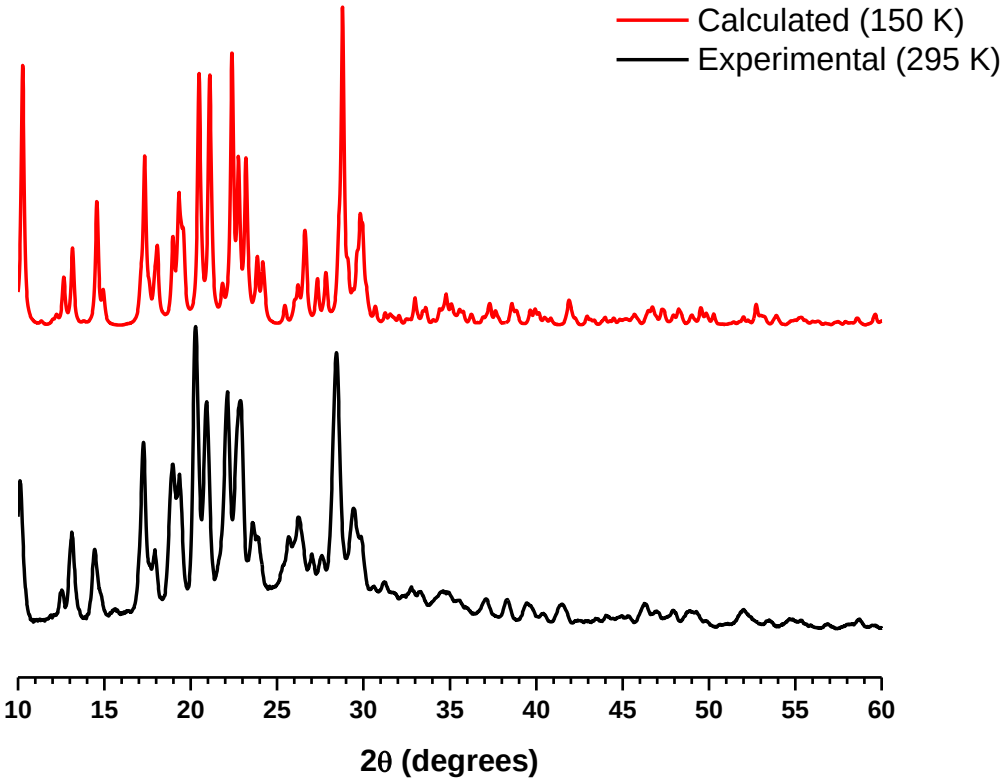

Figure S9. Comparison of calculated and experimental X-ray powder diffraction patterns for crystals of (H**FF**$^{+}$) (**BDS**$^{-2}$) • 4DMSO grown from DMSO.