A New Crystallographic Form of the layered Weak-Ferromagnet $Fe[(CH_3PO_3)(H_2O)]$

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A second form of the literature-known layered weak-ferromagnet $Fe[(CH_3PO_3)(H_2O)]$ has been isolated. The X-ray single crystal structure of this new form, i.e. form (**2**), has been carried out at T = 300, 200 and 130 K [1]. The latter crystallizes as a needle-like crystals, in the orthorhombic space group $Pmn2_1$: a = 5.717(1), b = 8.809(2), c = 4.815(1) Å, while form (**1**) crystallizes, as a platelet-like crystals, in the orthorhombic space group $Pna2_1$: a = 17.58(2), b = 4.814(1), c = 5.719(1) Å [2]. The difference between the two forms lies in the ligand arrangement. In the form (**2**) the methyl groups above and below the inorganic layer are ~ 12° away from the normal axes of the inorganic layers, keeping the same orientation from layer to layer along the *b*-direction. In form (**1**) the *a* parameter is twice larger than the corresponding *b* parameter of form (**2**) due to the alternation of the inclination of the methyl groups in a zig-zag way. This is the first example of dimorphism observed in metal alkylphosphonates.

[1] Léone P., Palvadeau P., Boubekeur K., Meerschaut A., Bellitto C., Bauer E.M., Righini G., *J. Solid State Chem.*, *in press*. [2] Bellitto C., Federici F., Colapietro M., Portatone G., Caschera D., *Inorg. Chem*, 2002, **41**, 709.

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