$Mg_{0.5}(Zn_{0.5}Fe_{0.5})_2[TeO_3]_3[H_2O]_{4.5}$	*hP*56	(176) $P6_3/m$ – i^3h^2fe

$Mg_{0.5}ZnFe(TeO_3)_3{\cdot}4.5H_2O$ [1], zemannite
Structural features: Units of two face-linked $(Fe,Zn)O_6$ octahedra ($(Fe,Zn)_2$ pairs) and $:TeO_3$ ψ-tetrahedra share vertices to form a 3D-framework; Mg and H_2O in channels parallel to [001] (partial disorder). See Fig. IV.74.

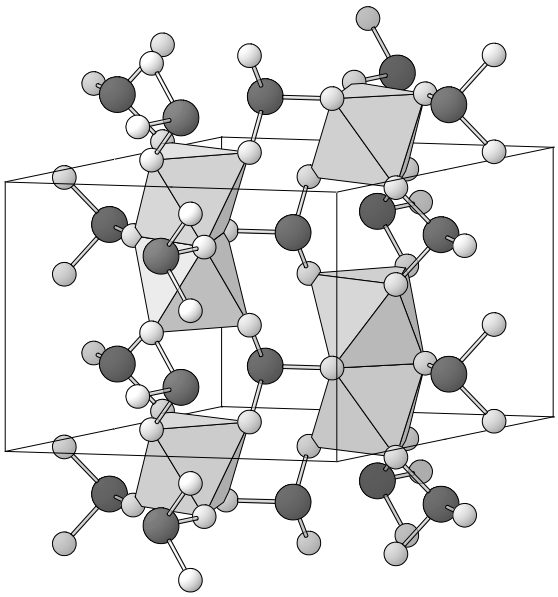

Fig. IV.74. **$Mg_{0.5}ZnFe(TeO_3)_3{\cdot}4.5H_2O$**

Arrangement of $(Fe,Zn)O_6$ octahedra and $:TeO_3$ ψ-tetrahedra (Te atoms dark, O atoms light). For clarity, Mg atoms and H_2O molecules are omitted.

Miletich R. (1995) [1]
$Fe_{1.16}H_{8.16}Mg_{0.45}O_{13.08}Te_3Zn_{0.84}$
$a = 0.9404$, $c = 0.7636$ nm, $c/a = 0.812$, $V = 0.5848$ nm^3, $Z = 2$

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
$(OH_2)1$	12*i*	1	0.0618	0.1889	0.1599	0.35	non-colinear $(OH_2)_2$
$(OH_2)2$	12*i*	1	0.1984	0.1266	0.0161	0.33	single atom (OH_2)
O3	12*i*	1	0.4908	0.1421	0.0704		non-colinear TeFe
O4	6*h*	*m*..	0.1614	0.5051	$^1/_4$		non-coplanar triangle $TeFe_2$
Te5	6*h*	*m*..	0.5442	0.04063	$^1/_4$		non-coplanar triangle O_3
M6	4*f*	3..	$^1/_3$	$^2/_3$	0.05958		octahedron O_6
Mg7	4*e*	3..	0	0	0.171	0.225	

M6 = 0.58Fe + 0.42Zn
Experimental: single crystal, diffractometer, X-rays, wR = 0.026

Remarks: Natural specimen from the Bambolla mine, Moctezuma, Mexico. Composition $Mg_{0.42}Zn_{0.79}\_(Fe^{3+})_{1.10}(Mn^{2+})_{0.08}Te_{2.98}O_9{\cdot}xH_2O$ from electron microprobe analysis. No attempt was made to distinguish Fe and Zn in the refinement. We assigned an approximate value to the Fe/Zn ratio of site M6 based on the chemical analysis. Short interatomic distances for partly occupied site(s). Hydrogen atoms are not taken into consideration for Pearson symbol, Wyckoff sequence and atomic environments.

References: [1] Miletich R. (1995), Eur. J. Mineral. 7, 509-523.