Chaidamuite  
\((\text{Zn}, \text{Fe}^{2+})\text{Fe}^{3+}(\text{SO}_4)_2(\text{OH})\cdot 4\text{H}_2\text{O}\)

Crystal Data:  
Triclinic, pseudomonoclinic.  
Point Group: 1.  
As thick tabular to pseudocubic crystals, with \{001\}, \{010\}, \{011\}, and \{T01\}; as grains or granular aggregates, to < 1 mm.

Physical Properties:  
Cleavage: On \{001\} and \{100\}, perfect.  
Fracture: Conchoidal.  
Hardness = 2.5–3  
\(D(\text{meas.}) = 2.722(2)\)  
\(D(\text{calc.}) = 2.72\)

Optical Properties:  
Translucent.  
Color: Brown to yellow-brown.  
Streak: Pale yellow.  
Luster: Vitreous.  
Optical Class: Biaxial (+).  
Pleochroism: Strong; \(X = \) pale yellow to colorless; \(Y = \) pale yellow; \(Z = \) brownish yellow.  
Orientation: \(X = b; Y \wedge a = 12^\circ; Z \wedge c = 28^\circ\).  
Dispersion: \(r < v\), strong.  
\(\alpha = 1.632(1)\)  
\(\beta = 1.640(1)\)  
\(\gamma = 1.688(1)\)  
2V(\text{meas.}) = 44(2)^\circ

Cell Data:  
Space Group: \(P1\).  
\(a = 7.309(2)\)  
\(b = 7.202(2)\)  
\(c = 9.691(3)\)  
\(\alpha = 89.64(3)^\circ\)  
\(\beta = 105.89(3)^\circ\)  
\(\gamma = 91.11(2)^\circ\)  
\(Z = 2\)

X-ray Powder Pattern:  
Xitieshan mine, China.  
3.118 (100), 3.090 (95), 9.40 (80), 5.00 (80), 3.64 (70), 5.03 (65), 2.048 (40)

Chemistry:  
<table>
<thead>
<tr>
<th>Element</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{SO}_3)</td>
<td>40.63</td>
<td>39.79</td>
</tr>
<tr>
<td>(\text{SiO}_2)</td>
<td>0.15</td>
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</tr>
<tr>
<td>(\text{Al}_2\text{O}_3)</td>
<td>0.12</td>
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</tr>
<tr>
<td>(\text{Fe}_2\text{O}_3)</td>
<td>20.00</td>
<td>19.84</td>
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<tr>
<td>(\text{FeO})</td>
<td>2.09</td>
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<tr>
<td>(\text{MnO})</td>
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<tr>
<td>(\text{ZnO})</td>
<td>17.00</td>
<td>20.22</td>
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<tr>
<td>(\text{Na}_2\text{O})</td>
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<tr>
<td>(\text{K}_2\text{O})</td>
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<tr>
<td>(\text{H}_2\text{O})</td>
<td>19.21</td>
<td>20.15</td>
</tr>
<tr>
<td>Total</td>
<td>99.29</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Xitieshan mine, China; corresponds to \((\text{Zn}_{0.85}\text{Fe}_{0.12})_{\Sigma=0.97}(\text{Fe}_{1.01}\text{Al}_{0.01})_{\Sigma=1.02}(\text{SO}_4)_2\cdot 3.87\text{H}_2\text{O}\).  
(2) \(\text{ZnFe(SO}_4\text{)}_2(\text{OH})\cdot 4\text{H}_2\text{O}\).

Occurrence:  
A secondary mineral in the oxidized portions of a Pb–Zn–Fe sulfide deposit.

Association:  
Coquimbite, copiapite, butlerite, zincobotryogen.

Distribution:  
From the Xitieshan Pb–Zn mine, south of Mt. Qilianshan, Chaidamu, Qinghai Province, China.

Name:  
For the occurrence near Chaidamu, China.

Type Material:  
Geology Department, Lanzhou University, Lanzhou; Geology and Mineral Resources Museum, Ministry of Geology, Beijing, China.

References:  