Maikainite

\[ \text{Cu}_{20} (\text{Fe,Cu})_6 \text{Mo}_2 \text{Ge}_6 \text{S}_{32} \]

**Crystal Data:** Isometric.  *Point Group:* 4 3m.  Crystals resemble rhombohedra or octahedra, commonly as rounded grains to 150 μm or as rims on colusite or zones in ovamboite.


**Optical Class:** Isotropic.

**Cell Data:** *Space Group:* P4 3n.  By analogy with the germanite group.  \( a = 10.64 \)  \( Z = 1 \)

**X-ray Powder Pattern:** Maikain deposit, Kazakhstan.  
\[ 3.07 \text{ (100)}, \ 2.66 \text{ (20)}, \ 1.884 \text{ (80)}, \ 1.603 \text{ (40)}, \ 1.220 \text{ (20)}, \ 1.331 \text{ (10)}, \ 1.190 \text{ (10)} \]

**Chemistry:**

\[
\begin{align*}
\text{Cu} & \quad 42.55 \\
\text{Fe} & \quad 6.35 \\
\text{Zn} & \quad 0.56 \\
\text{Mo} & \quad 5.21 \\
\text{W} & \quad 1.24 \\
\text{V} & \quad 0.12 \\
\text{Ge} & \quad 10.86 \\
\text{Ga} & \quad 0.15 \\
\text{As} & \quad 2.28 \\
\text{S} & \quad 31.40 \\
\text{Total} & \quad 100.72
\end{align*}
\]

(1) Maikain deposit, Kazakhstan; electron microprobe analysis; corresponding to  
\((\text{Cu}_{21.91}\text{Fe}_{3.72}\text{Zn}_{0.28})_{\Sigma=25.91}(\text{Mo}_{1.79}\text{W}_{0.22}\text{V}_{0.08})_{\Sigma=2.09}(\text{Ge}_{4.90}\text{Ga}_{0.07}\text{As}_{0.99})_{\Sigma=5.96}\text{S}_{32.04}\).

**Mineral Group:** Germanite group.

**Occurrence:** In a gold-bearing, base-metal, massive-sulfide deposit (Maikain); in a germanium-bearing, base-metal, massive-sulfide deposit (Tsumeb).

**Association:** Germanite, ovamboite, germanocoulusite, sphalerite, bornite, tennantite, gallite, galena, barite (Maikain); ovamboite, germanite and germanocoulusite (Tsumeb).

**Distribution:** From the Maikain deposit, Kazakhstan, and the Tsumeb deposit, Ovamboland, Namibia.

**Name:** For the locality, the *Maikain* deposit, that produced the first specimens studied.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, and in the Mining Museum, St. Petersburg, Russia.

**References:**  
(1) Spiridonov, E.M. (2003) Maikainite \( \text{Cu}_{20} (\text{Fe,Cu})_6 \text{Mo}_2 \text{Ge}_6 \text{S}_{32} \) and ovamboite \( \text{Cu}_{20} (\text{Fe,Cu,Zn})_6 \text{W}_2 \text{Ge}_6 \text{S}_{32} \): New minerals in massive sulfide base metal ores. Doklady Earth Sci., 393A, 1329-1332.  