Eocene U-Pb Scheelite LA-ICP-MS Dates of Stibnite-Scheelite Mineralization in the Yellow Pine Au-Sb-W Mining Area, Central Idaho, USA

Abstract

Gold, antimony, and tungsten ore minerals are located along the Meadow Creek Fault zone that cuts Late Cretaceous granodiorite of the Idaho Batholith and Neoproterozoic to Ordovician stratigraphy. Stibnite mineralization, as disseminated breccias and veinlets, is hosted within Idaho Batholith granitoids and marbles. By contrast, scheelite mineralization, as subvertical quartz veins and stockworks, is hosted in Neoproterozoic to Ordovician strata. Scheelite and stibnite ore bodies are both preferentially mineralized along the Hermes marble (Ohm) and Middle marble (Cambrian to Ordovician) of the Idaho Batholith. The 3 main ore deposits are: (1) Yellow Pine, (2) Hangar Flats, and (3) Stibnite. The Yellow Pine ore system: first, auriferous pyrite and arsenopyrite, second, scheelite and stibnite (Lewis, 1984). Gammons (1988) date of 77.9 ± 0.3 Ma that was interpreted as a date of gold (Au) mineralization in the mining area. Metallogenic modeling suggests that mineralization occurred between 43 Ma and 36 Ma.

Geologic Setting

The Yellow Pine mine area is located in the northern Rocky Mountains, within the western United States. The Yellow Pine mine area is situated within the Idaho Batholith, a large granodiorite intrusion that extends for over 700 km (430 miles) along the axis of the western Windermere Rift, a deep-sea fracture zone. The Yellow Pine mine area is located within the Idaho Batholith, a large granodiorite intrusion that extends for over 700 km (430 miles) along the axis of the western Windermere Rift, a deep-sea fracture zone. The Yellow Pine mine area is situated within the Idaho Batholith, a large granodiorite intrusion that extends for over 700 km (430 miles) along the axis of the western Windermere Rift, a deep-sea fracture zone.

Methods

Drill core samples were collected from the hanging Ritzes (Fig. 1). 3, 4, and 6. Scheelite-bearing leachates were collected from the Yellow Pine ore system, which is located within the Idaho Batholith, a large granodiorite intrusion that extends for over 700 km (430 miles) along the axis of the western Windermere Rift, a deep-sea fracture zone. Scheelite mineralization occurred along the Hermes marble (Ohm) and Middle marble, which is associated with the neighboring Thunder Mountain caldera complexes (50–43 Ma). Scheelite mineralization occurred along the Hermes marble (Ohm) and Middle marble, which is associated with the neighboring Thunder Mountain caldera complexes (50–43 Ma). Scheelite mineralization occurred along the Hermes marble (Ohm) and Middle marble, which is associated with the neighboring Thunder Mountain caldera complexes (50–43 Ma). Scheelite mineralization occurred along the Hermes marble (Ohm) and Middle marble, which is associated with the neighboring Thunder Mountain caldera complexes (50–43 Ma). Scheelite mineralization occurred along the Hermes marble (Ohm) and Middle marble, which is associated with the neighboring Thunder Mountain caldera complexes (50–43 Ma).

Results

Scheelite dates by scheelite zone were used to determine the scheelite mineralization time frame. Scheelite mineralization occurred during the Eocene. Scheelite mineralization occurred during the Eocene. Scheelite mineralization occurred during the Eocene. Scheelite mineralization occurred during the Eocene. Scheelite mineralization occurred during the Eocene.

Discussion

Conclusions

References

Future Research

Acknowledgments

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Figure 3. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 1. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 2. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA.

Figure 4. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 1. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 2. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA.

Figure 5. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 1. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 2. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA.

Figure 6. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 1. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA. Table 2. U–Pb LA–ICP–MS geochronologic data for Stibnite-Scheelite mineralization in the Yellow Pine Au-Sb-W mining area, Central Idaho, USA.