Kedonojankulma, a recently discovered Palaeoproterozoic porphyry-type Cu-Au deposit in Southern Finland

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Introduction

- Located in the Palaeoproterozoic Svecofennian Arc Complex (1.89-1.88 Ga) in Southern Finland
- Hosted by subvolcanic, moderately to intensely altered quartz-plagioclase porphyry, a rhythmic phase of the Kedonojankulma tonalite intrusion

Exploration

Geochemistry:
- The prospect (Cu-Au-Ag-Mo-Zn-Sb anomaly) was found after systematic till geochemical exploration. The sampling density was increased during the exploration process from 4 samples/km² to 50 km² grid.
- Magnetic surveys, to outline the lithological units
- IP surveys, to delineate the sulphide mineralisation
- Geological mapping
- Bedrock mapping and tracing of mineralised orometas

Geophysics:
- Diamond drilling: 58 drill holes, altogether 5 km were drilled to outline the altered and mineralised part of the intrusion
- Controlled by shear/breccia structures

Mineral deposit

- The mineral deposit has been modelled using the cut-off value 0.2% of Cu (see table)
- The width of the drill mineralisation is up to 70 meters and length at least 200 meters
- The size of deposit is open to the depth and towards south-west
- Another Cu mineralisation was discovered in the same intrusion, at a distance of 1.5 km

<table>
<thead>
<tr>
<th>Metal</th>
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<td>Cu ppm</td>
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<td>Ag ppm</td>
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Mineralization and alteration

- Porphyrnic Cu-Au-Mo-Zn-Sb ore
- Very fine-grained sulphide dissemination, in places as chalcopyrite veins
- Hosted by subvolcanic, moderately to intensely altered quartz-plagioclase porphyry
- Narrow quartz veins, including chalcopyrite, pyrite and sometimes molybdenite, both in core mineralization and in places outside the mineralization
- Main ore minerals: chalcopyrite, arsenopyrite, pyrite, pyrrhotite, sphalerite and in places chalcocite and bornite. Chalcocite as secondary mineral
- Minor ore minerals: galena, microteite, marcasite, scheelite, ilmenite, rutile, native bismuth, Bi-sulphides, Bi-arsenides, Cu-arsenides, gold, silver and several types of Ag-Sb sulphides
- Typical alteration features: propylitic alteration, sericitization, silicification, alteration
- Intensely altered rocks: LREE depletion, Th/Ca 0.9, Na/K 4.5

Conclusion

- Metallic zoning from core outwards: Cu-Au-Mo-Zn-Sb-Bi-Ag-Mo, Zn
- Host rock is moderately to intensely altered quartz-plagioclase porphyry
- Mineralization is controlled by sheared, brecciated zone
- Potential to increase the size of the deposit

Diamond drilling:
- Bedrock mapping and tracing of mineralized orometas
- IP surveys, to delineate the sulphide mineralization
- Geological mapping:
  - 50 m grid increased during the exploration process from 4 samples/1 km² to 50 km² grid.
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