A note on the occurrence of gold in the Ilímaussaq alkaline complex, South Greenland

Henning Bohse and Jens Frederiksen

Mineral Development International A/S, Blokken 61, DK-3460 Birkerød, Denmark. E-mail: *mdi@mdi.dk*

Keywords: agpaitic, gold, Greenland, Ilímaussaq

Single grains of gold measuring 22 µm have been found in analcime veinlets intersecting concentrations of pyrrhotite, pyrite and marcasite in the lowermost part of layer +16 red of the kakortokite sequence in the southernmost part of the Ilímaussaq alkaline complex (Davison 1989). The kakortokite sequence consists of a repetition of units of lower black layers rich in arfvedsonite, red layers rich in eudialyte and white layers rich in microcline (cf. Sørensen 2001, this volume, for a review of the geology of the Ilímaussaq complex). Layer +16 red is the most prominent eudialyte-rich layer of the complex. The identification of the gold grains was verified by SEM - Energy dispersive X-ray analysis (Fig. 1).

Flotation concentrates of the sulphide minerals show 8.8 g/t gold (Davison 1989). A number of kakortokite samples have been analysed for gold by atomic absorption spectrometry of 5 g samples decomposed in aqua-regia, detection limit 10 ppb gold, most with a negative result (Le Couteur 1990). The samples of layer +16 red all showed < 10 ppb gold. Up to 50 ppb gold was found in layer B red of the transitional layered kakortokite (Bohse & Andersen 1981).

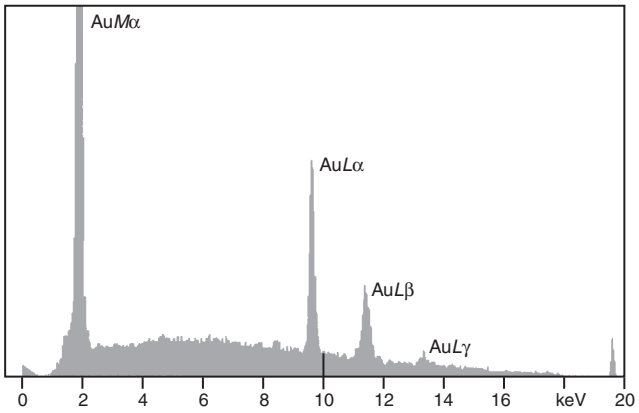

Fig. 1. Energy spectrum of native gold from analcime veinlet in kakortokite layer +16 red. The spectrum was obtained with a scanning electron microscope. From Davison (1989).

Samples of lujavrite from the Kvanefjeld area in the northern part of the complex have been analysed for gold by direct current plasma determination of metal in a fire-assay bead. Fifteen out of 42 samples gave more than 2 ppb, and the highest content found was 10 ppb (Tilsley & Fisher 1983).

Acknowledgement

The results are published with permission of Highwood Resources Ltd. Canada.

References

Bohse, H. & Andersen, S. 1981: Review of the stratigraphic divisions of the kakortokite and lujavrite in southern Ilímaussaq. In: Bailey, J.C., Larsen, L.M. & Sørensen, H. (eds): The Ilímaussaq intrusion, South Greenland. A progress report on geology, mineralogy, geochemistry and economic geology. Rapport Grønlands Geologiske Undersøgelse **103**, 53–62.

Davison, J.G. 1989: Mineralogical examination of Greenland ore samples submitted by Highwood Resources. Unpublished progress report 11, Lakefield Research. A Divison of Falconbridge Limited, 20 pp. + appendices. Toronto, Canada (in archives of Geological Survey of Denmark and Greenland, GEUS Report File 20577).

Le Couteur, P.C. 1990: Ilímaussaq Joint Venture geological report for 1989, 34 pp. + appendices. Unpublished report, Strathcona Mineral Services Ltd., Toronto, Ontario, Canada (in archives of Geological Survey of Denmark and Greenland, GEUS Report File 20573).

Sørensen, H. 2001: Brief introduction to the geology of the Ilímaussaq alkaline complex, South Greenland, and its exploration history. In: Sørensen, H. (ed.): The Ilímaussaq alkaline complex, South Greenland: status of mineralogical research with new results. Geology of Greenland Survey Bulletin **190**, 7–23 (this volume).

Tilsley, J.E. & Fisher, A.T. 1983: Mineral resource studies – Kvanefjeld deposit, South Greenland for Uranium Extraction Project, 52 pp. + appendix. Unpublished report, Risø National Laboratory, Roskilde, Denmark.

