Ruby, Pink Sapphire and Rare Mineral Localities in West Greenland
Richard K. Herd
Natural Resources Canada, Earth Sciences Sector, 601 Booth Street, Ottawa ON K1A 0E8
herd@nrcan.gc.ca

Brian F. Windley
Department of Geology, University of Leicester, Leicester LE1 7RH, England

and

Peter W. Uitterdijk Appel
GEUS, DK-1350, København, Danmark

Summary
Numerous localities of rare aluminous and magnesian minerals have been known throughout
the Archean of southwest Greenland since regional mapping in the 1970’s. They consist of
varying amounts of sapphirine, spinel, corundum, kornerupine, cordierite, plagioclase,
sillimanite, kyanite, orthopyroxene, forsteritic olivine, magnesian-aluminous clino- and
orthoamphiboles, phlogopite, chlorite, and sometimes diopside and clinonite, hógbomite,
tourmaline and garnet with numerous auxiliary and accessory phases. Their number and extent
has increased since mining exploration returned to the area in 2004. The highest concentration
of rare mineral pods and zones, ranging from less than 1 metre down to microscopic, and up to
kilometres in length, is in the Fiskenæsset region, defining a 50 km by 100 km terrane of
amphibolite- to granulite- grade rocks within which folded and thrusted horizons of layered and
chromite-bearing gabbro-anorthosite intrusions occur. Mafic-ultramafic pods and layers, and
magnesian/calcic/aluminous sedimentary protoliths have interacted with chromiferous magmatic
fluids along the upper anorthositic margins of the intrusions, and with late granodioritic regional
pegmatites and their fluids, to form the rare assemblages (Schumacher et al. 2009).

Over 100 localities including several extensive zones have been discovered of which most
contain potential gemstones such as ruby, pink sapphire, sapphirine, spinel, kornerupine,
kyanite or cordierite. A few contain abundant dark red ruby mainly in chromian clinoamphibole-
plagioclase-sapphirine rocks, and rich concentrations of pink sapphire in assemblages
dominated by gedrite, cordierite, sapphirine, kyanite and sillimanite, all with phlogopite.

Exploration has defined a number of localities that may be suitable for mining the rubies and
pink sapphires, and markets for these are being tested. Interest in all the gemstones from the
area is likely to increase. An outstanding question is where the extension of the Fiskenæsset
region may be found in Canada. Exploration for diamonds in Canada has yielded ruby
corundum in heavy mineral concentrates.

References
Schumacher, John C., Probst, Anna C., Keulen, N.T, Van Hinsberg, V.J., Windley, Brian, and Herd, R.K. , 2009,
Origin of ruby-bearing and related aluminous assemblages in southwest Greenland: Geological Society of America