

What can we learn from ultramafic rocks in Mesoarchaean orthogneisses in the Fiskefjord region of southern West Greenland?

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Ultramafic rocks occur sporadically as variably sized, lens-shaped bodies (e.g., Seqi, Miaggoq and Ulamertoq) within Mesoarchaean (ca. 3000 Ma) amphibolite- to granulite-facies orthogneisses in the Akia terrane of southern West Greenland (Garde, 1997 *Geol. Greenland Surv. Bull.*; Szilas et al., 2015a *GeoResJ*). Two contrasting models can be proposed for the origin of peridotite bodies in the studied area and other Archaean belts in Greenland: (1) residual mantle peridotite after partial melting, and (2) ultramafic cumulates (Friend & Nutman, 2011 *Geology*; Szilas et al, 2015a, 2015b *Gondwana Res.*). In either case, these ultramafic bodies would provide new insights into the links between magmatic-metasomatic processes and crust-continent formation during the Archaean. The Ulamertoq body is a relatively large ultramafic body, 1 x 1.5 km in size. Here we document its field occurrence and petrological characteristics as an example of the ultramafic bodies in the studied area in the context of magmatic and metasomatic processes during the Archaean age. The Ulamertoq peridotite body and also other ultramafic bodies are crosscut by granitic rocks at ca. 3000 Ma (U-Pb zircon; Szilas et al., 2016 AGU abstract). The Ulamertoq peridotite body suffered extensive metasomatism of hydrous silica-rich metasomatic fluids/melts and provides evidence for subduction-like metasomatism during the Archaean. Consequently, although it is difficult to find primary igneous features in peridotite bodies from Archaean belts, our field observations and geochemical data from these peridotite bodies support their cumulate origin (Szilas et al., 2015a, b).

Keywords: Occurrence of Mesoarchaean peridotite body, Mesoarchaean Subduction-related metasomatism, Archaean ultramafic cumulate