# Geochemistry and petrography of the ultramafic metavolcanic rocks in the eastern portion of the Shebandowan greenstone belt, northwestern Ontario

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The ultramafic metavolcanic rocks in the eastern portion of the Shebandowan greenstone belt are located within Conmee Township approximately 40 km west of Thunder Bay, Ontario. The Shebandowan greenstone belt is part of the larger Wawa-Abitibi terrane. The study area is 4 $km^2$ in size and was mapped in summers of 2015 and 2016. The belt hosts the past-producing Shebandowan Ni-Cu-PGE mine, located approximately 35 km west of the study area that was active from 1972 until 1998. Preliminary geochemical analyses show that the ultramafic rocks have average MgO contents of 30 wt% but some samples showing up to 35 wt% MgO. The $SiO_2$ contents average 40 wt%, with some samples as low as 35 wt%. The Ni content of the study rocks fits well with the typical komatiite compositions with an average of 2059 ppm and average Cr content of 3059 ppm. The geochemical data suggests that the ultramafic rocks in the study area are komatiites, with rare komatiitic basalts or siliceous high-magnesium basalts (SHMB) all of which have been reported to show spinifex texture. The mapping identified two main areas of ultramafic rocks. The southern ultramafic rocks consist mostly of massive peridotites often displaying a cumulate texture. These dark black/green rocks are very magnetic and are seen in northwest trending ridges approximately 1 km in length. The northern ultramafic rocks are seen in contact with sedimentary units, which display thermal erosion textures and suggest the incorporation of the sedimentary rocks locally into the ultramafic unit. Xenoliths of the sedimentary units as well as peperites are also found at these contacts. The northern ultramafic rocks display well-developed spinifex textures, are light grey in colour and are non-magnetic. The alteration present in the ultramafic rocks is mainly serpentine and calcite. The northern and southern ultramafic units are separated by several lithologies including conglomerate, intermediate volcanic rocks, felsic volcanic rocks, and monzonitic intrusions. Further geochemical analysis will be completed in order to determine the precise rock types, the relationship between the northern and southern ultramafic packages, the petrogenesis of these rocks, and how their evolution fits with the regional geology. This new model for the petrogenesis of the area will also assess the potential for mineralization in the ultramafic units.