# Supplementary material

# Tectonic evolution of the Dugurdsknappen area, Trondheim Nappe Complex, central Norwegian Caledonides

# Analytical methods

## Whole rock geochemistry

Major (>~0.5%) and trace (<~0.5%) element analyses were done on glass beads and pressed powder pellets respectively. A PANaluthical Axios 4kW Rh-X-ray tube x-ray spectrometer (XRF) was used for major and trace element analyses, while rare earth elements (REE) and high precision Nb, Hf, Ta and Th analyses were obtained using a New Wave UP193FX Excimer laser coupled to a Thermo Element XR single collector high resolution ICP-MS. All preparations and analyses of samples were done by the laboratory at the Geological Survey of Norway (NGU).

## U-Pb zircon geochronology

Mineral separation was conducted at the Department of Geosciences at the University of Oslo, where conventional magnetic and heavy liquid techniques were used to separate zircons from two samples. Individual zircon crystals were handpicked under a binocular microscope, mounted in epoxy and polished down to expose the grain centers. Backscatter (BSE) and cathodoluminescence (CL) images of the zircons were obtained prior to analysis using a Leo 1450 VP Scanning Electron Microscope (SEM) with a wolfram filament at the Geological Survey of Norway. The laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) was performed using a New Wave UP193FX Excimer laser coupled to a Thermo Element XR single collector high resolution ICP-MS at the Geological Survey of Norway. A 15μm wide line scan at a speed of 2μm/sec was used at energies of 4.0 J/cm2 and a repetition rate of 10 Hz. Ca 0.4 l/min He gas was used as a carrier gas flushing through the sample chamber, mixed with ca 0.9 l/min Ar gas and transported to the ICP-MS. The measurement time was first 30 s of gas blank acquisition and thereafter up to 30 s data acquisition. Masses 202Hg, 204Hg + 204Pb, 206Pb, 207Pb, 208Pb, 232Th and 238U were acquired in a time-resolved counting scanning mode. 235U was recalculated from the natural abundance for 238U/235U (Steiger & Jäger 1977). The measured isotope ratios were corrected for element- and mass-bias effects using the zircon standard GJ (607 ± 0.4 Ma; Jackson *et al.* 2004). The zircon standards 91500 (1065 ± 0.3 Ma; Wiedenbeck *et al.* 1995) and Temora II (416.5 ± 0.22 Ma; Black *et al.* 2004) were used as control standards, and reference zircons ØS-99-14 (1797 ± 3 Ma; Skår 2002), Z6412 (1160 ± 1.6 Ma; unpublished, GSC Ottawa) and the in-house standard T33187 (2674 ± 8; unpublished, NGU) were used for standardization. The data were not corrected for common Pb, but the signal from 204Pb is used to exclude analyses containing common Pb. The data reduction was done with the GLITTER® software version 4.4.4 (Van Achterberg *et al.* 2001). U-Pb ages of the zircons were calculated using the ISOPLOT software for Microsoft Excel version 2.49 (Ludwig 2001), and Kernel density estimates and histograms of provenance ages were plotted with Density Plotter (Vermeesch 2012).

# References

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