

Deformation phases delineated by AMS in high-grade migmatites, Olkiluoto, SW Finland

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The present study was carried out to get additional information of ductile structures and deformation phases at the site for the long-term disposal of high nuclear waste in Olkiluoto, SW Finland. Detailed structural geological mapping and sampling to study anisotropy of magnetic susceptibility (AMS) was conducted at selected outcrops in Olkiluoto. The AMS has proven to be a useful tool for further examinations on mineral fabrics in high-grade migmatite terrains and our study focuses of coupling AMS fabric to the different ductile deformational phases recognized in the earlier site studies at Olkiluoto.

Three different deformation phases have been determined during earlier structural studies, but only limited lineation data was possible to acquire. The results obtained from our AMS study shows discernible linear data, which can be connected to the previously collected structural information. Each individual deformation phase exhibit a difference in the structural pattern for the mineral fabric indicated by a more oblate or prolate deformational ellipsoid. The AMS data also shows both α -lineation and β -lineation which verifies the importance of a detailed structural understanding of the study site prior to when an AMS study is carried out in a polyphasically deformed high-grade migmatite environment.