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Mantle-crust transition zone in the Ślęża ophiolite (SW Poland) and in other European Variscan ophiolites from Rheic Ocean

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The Gogołów-Jordanów The Variscan Ślęża ophiolite in SW Poland is a remnant of the ancient Rheic Ocean. The stratigraphically lower part of the massif consists of serpentinites with harzburgitic affinity, serpentinites with non-serpentine phases, ultramafic cumulates, layered and isotropic gabbros. The non-serpentine phases form: (1) olivine-clinopyroxene aggregates, (2) microcrystalline olivine-clinopyroxene aggregates ("brownish aggregates"), (3) clinopyroxene-spinel symplectites, (4) coarse-grained olivine aggregates, (5) olivine grains with magnetite inclusions (with or without cleavage), (6) olivine-chromite aggregates and (7) chromite veinlets. Olivine occurs in three main varieties of different forsterite, NiO and MnO content. Clinopyroxene occurs in four varieties differing by mg#, Al_2O_3 and Cr_2O_3 content and is generally depleted in Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu relative to chondrite and primitive mantle. Chemical composition of chromite defines two groups with various cr#, MgO and FeO content.

The non-serpentine phases recorded various processes associated with serpentinite formation: [1] depletion processes of peridotite, [2] Ca-rich melt migration, [3] alteration of peridotite during ocean floor metamorphism and [4] greenschists facies metamorphism. The Ca-melt migration phases originated due to impregnation of peridotite, what is typical of peridotites occurring in the Moho transition zone. The impregnated peridotites occur above mantle harzburgites and below ultramafic cumulates in the Ślęża ophiolite, thus fitting the model ophiolitic stratigraphy. In other Variscan ophiolitic massifs in Europe, like the Careón or Lizard, this succession is not so clearly visible although the paleo-Moho could be also defined (cf. García et al., 1999, Power et al. 1996). The Ślęża ophiolite preserves very good MTZ section compared to other Variscan ophiolites.

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