Summary

The Gogołów-Jordanów (MGJ), Braszowice-Brzeźnica (MBB) and Szklary (MS) serpentinite massifs occur in the Fore-Sudetic Block and are parts of the dismembered Central-Sudetic ophiolite (CSO). The MGJ is an ultramafic member of the Ślęża ophiolite, which comprises a complete ophiolitic sequence consisting of (from S to N) serpentinites, ultramafic and mafic cumulates, layered and isotropic metagabbros, amphibolite sheeted dykes and lavas and dark radiolarian cherts. These rocks are interpreted (respectively) as mantle peridotite, cumulate member, plutonic member of the crust, volcanic member and ocean sediments. The MBB consists of serpentinite and metagabbros forming veins within serpentinite and large magmatic bodies. The MS, which is not always considered to be one of the CSO, consists of serpentinites and rare occurrences of amphibolites and metagabbros. It is penetrated by numerous granitoid bodies related supposedly to the Niemcza Shear Zone (NSZ).

The chemical composition of serpentinites is typical of depleted mantle harzburgite. Its elevated fluid-mobile element contents (Cs, Pb, Sb) are evidence of fluid penetration through serpentinites. The ultramafic rocks, despite their high serpentinization, contain relics of non-serpentine phases evidencing that (1) harzburgite was a protolith of serpentinites - serpentine bastite and mesh textures, (2) peridotite were percolated by basaltic melt - impregnation phases, (3) serpentinites were dehydrated due to metamorphic olivine and clinopyroxene crystallization at expense of serpentine - deserpentinization phases. A local feature of ultramafic rocks from the MGJ and MBB is an occurrence of tremolite, metamorphic olivine and chlorite in the vicinity of granitoid intrusions, which implies thermal effects of later intrusions. Tremolite and metamorphic olivine are ubiquitous together with metamorphic orthopyroxene in the MS. These minerals supposedly originated due to temperature increase related to magmatic and tectonic activity during the Niemcza Shear Zone formation.

Impregnation phases and chromitites are chemically similar to phases originating from melts occurring in the back-arc setting (specific rare earth elements patterns of clinopyroxene intermediate Cr# and Mg# in chromites, low platinum group elements concentrations in chromitites). The serpentinite textures and deserpentinization phases record metamorphic evolution of serpentinites involving: (1) low-temperature serpentinization typical for ocean floor metamorphism, (2) antigorite recrystallization, (3) deserpentinization, (4) antigorite serpentinization. The antigorite serpentinization shows that progressive metamorphism was followed by retrogressive alteration. Low pressures and temperatures of metamorphism of

serpentinites suggest that serpentinites were docked to the growing orogen but were not subjected to subduction.