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Petrogenesis of the Permian volcanic rocks from the southeastern part of North Sudetic Basin (West Sudetes, Poland).

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The investigations of the silica-rich volcanic succession were concentrated in the southeastern part of North Sudetic Basin (West Sudetes, Poland), within the southernmost fragment of the Swierzawa Graben. The Permian volcanic processes developed in the extensional, intra-plate geotectonic setting. The silica-rich, calc-alkaline suite of volcanic rocks consists at least five, co-existing series of volcanic rocks such as:

- the Tuff suite comprising one unit of bases surges deposits and two units of non-welded ignimbrites divided by 1 m thick epivolcaniclastic deposition;
- the Świny Ignimbrites suite comprising one simple cooling unit of extremely welded ignimbrites (high-grade ignimbrites);
- the Świny Lavas suite comprising at least four lava flows;
- the Popielowa Ignimbrites suite comprising one simple cooling unit of welded ignimbrite (moderate-grade ignimbrite);
- the Popielowa Lavas suite comprising three lava flows.

On the grounds of volcanic facies analyses, the least altered samples of lava flows were chosen for geochemical studies and modeling. Almost all major and some of trace elements on Harker's variation diagram show well-defined linear trends for the Popielowa Lavas suite, less readable ones for the Świny Lavas suite. However, some of the major elements (Ca, Mn) and trace elements (e.g. Ba) were mobilised during post-magmatic processes. Nevertheless, the changes were limited in scale, thus it is

possible to consider the source of magma and identify the geological processes that differentiated melt. The behaviour of trace elements is indicative for fractional crystallization as main process responsible for evolution of extruded magmas.

Parental melt for both suites were presumably identical. The calculated degree of fractional crystallization ranges from 37.9% to 40.8% for the Popielowa Lavas and the Świny Lavas, respectively. The obtained composition of cumulate fractionated from the parental melt is similar for both volcanic suites and comprises plagioclase of oligoclase composition, alkali feldspar, biotite, ilmenite, magnetite, apatite and zircone.

The isotopic study confirmed that the fractional crystallisation was the main process leading to formation of extruded melts for the Popielowa Lavas suite. Additionally, the isotopic model age suggest heterogeneity of both suites and confirm that the Świny Lavas suite was much more contaminated by crustal material than the Popielowa Lavas suite.