

MAGNETIC FABRIC OF THE UPPER CARBONIFEROUS MOLASSE SEDIMENTS (UPPER SILESIAN COAL BASIN, POLAND)

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The Upper Silesian Coal Basin (USCB), considered as a foredeep of the Variscan Moravo-Silesian Fold Zone, is situated in the borderland of Poland and Czech Republic. Upper Carboniferous coal-bearing molasse developed in the NE part of the Moravo-Silesian Basin on the Lower Carboniferous flysch sediments. Depositional process took place in the compressional regime, during the latest stages of the basin's closure.

Numerous structural analyses and models revealed several stages of structural development in the USCB. The current tectonic style of the rock sequences is thought to be formed mainly during the "after Namurian A" stage with maximum compression axis changing from NE-SW to N-S direction.

Conventional anisotropy of magnetic susceptibility measurements were performed to analyze relations between magnetic fabric and structural development of the basin.

Over 200 oriented samples from Namurian and Westphalian molasse association (mudstones, sandstones) were selected from six brickyards and mines. Variability of AMS trend was analyzed in all of the sites respectively. In addition, anisotropy of remanence was measured, as well as detailed rock magnetic studies were performed, to test the reliability of the obtained AMS data. Measured magnetic fabric is of sedimentary origin or typical for the earliest deformational stages. Bedding-parallel foliation with maximum anisotropy axes trending NNE-SSW to NE-SW suggest NW-SE structural shortening direction. AMS pattern is comparable with the data from some slightly deformed Lower Carboniferous flysch deposits, located SE from USCB, in the Czech Republic. It corresponds also with Moravo-Silesian folds and thrusts direction. Obtained results are contrary to the main deformational stage, however they are consistent with models, where the principal stress axis is oriented approximately NW-SE. Therefore, AMS data from the Upper Carboniferous molasse sediments reflect probably tectonic regime postdating the Westphalian B, but possibly present also in Permian and Early Triassic time.

AMS, Carboniferous, Poland

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