Chemostratigraphy of the Silurian from Łupianka – 2 outcrop (Sudetes, Poland): A preliminary report

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Abstract

Łupianka – 2 outcrop is located on Łupianka mountain in the Bardo Mountains of Central Sudetes (South West Poland) which belong to Saxothuringian Zone of Central European Variscides. The Saxothuringicum was a part of the Armorican Terrane Assemblage located on the southern hemisphere in the southern part of the Rheic Ocean near northern Gondwana margin during the Silurian Period. Present data is the first preliminary record of carbon isotope chemostratigraphy in the Silurian succession of the Saxothuringian Zone. Pelagic black, gray, grayish and greenish argillitic shales, about 7 m in thickness, crop out at the Łupianka – 2 section sampled for carbon isotope analyses. Samples for \(\delta^{13}\)C\(_{\text{carb}}\) analyses have been collected approximately every 0.1 m. For the purpose of the \(\delta^{13}\)C\(_{\text{org}}\) analysis, the samples were powdered and dissolved using HCl acid for 24 hours to remove carbonate minerals. Dried samples were analyzed by isotope ratio mass spectrometer. Graptolite fauna is rare in the analyzed samples. However, such graptolites as \textit{Cyrtograptus cf. centrifugus} Bouček from the lower part, and \textit{Cyrtograptus cf. multiramis} Törnquist from the upper part of Łupianka – 2 section allowed for stratigraphic assignment of the section to the uppermost Telychian (Llandovery) – lowermost Homerian (Wenlock) interval. Sampled section can be divided in three parts according to \(\delta^{13}\)C\(_{\text{org}}\) values. The lower part comprising 7 samples is marked by \(\delta^{13}\)C\(_{\text{org}}\) values that vary from -29.63 to -29.95 \(\%\). In the middle part of the section (0.9–2.5 m) the \(\delta^{13}\)C\(_{\text{org}}\) values rise to -27.96 \(\%\) and then vary around -28 \(\%\). We assume that this part could be linked to the Ireviken positive carbon excursion with rise, stable and fall zones. The upper part of the sampled section (2.6–2.9 m) yields the lowest \(\delta^{13}\)C\(_{\text{org}}\) values that, with some fluctuations, vary around -31 \(\%\).

\textbf{Keywords:} \(\delta^{13}\)C\(_{\text{org}}\), Silurian, Bardo mountains

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