

The project aims to answer the following essential questions: (i) what factors caused that, despite the presence of siliceous sponges regarded as the main source of silica in almost whole Upper Jurassic succession from the Kraków-Częstochowa Upland (KCU), the horizons of chert nodules occur only in the Middle Oxfordian biostromes and in calciturbidites from the Oxfordian/Kimmeridgian turn whereas in the bedded facies constituting the rest of the succession and in the carbonate buildups the chert nodules are absent; (ii) what was the source of silica for bedded cherts known from calciturbidites deposited at the Oxfordian/Kimmeridgian turn, i.e. when the growth of siliceous sponges, being potentially the main source of silica, was somewhat hampered; (iii) are there any links between the silicification episodes of Upper Jurassic carbonates from the KCU and the local synsedimentary tectonics accompanied by the activity of sea-floor, low-temperature hydrothermal vents. Additional objective of the project is the full characterization of siliceous deposits from the KCU, including mineralogical and petrographic observations, geochemical analyses and stable isotope measurements. Finally, it is expected that comprehensive analysis of the results of various integrated research methods will enable us to characterize studied cherts with precision such that flint artefacts collected by archaeologists in the Southern Poland can be related to particular regions of chert occurrence or even to particular outcrops where cherts were extracted and the flint tools were produced. Such information would be crucial in archaeological attempts to determine the origin of flint artefacts.

The solution of above presented research problems requires the selection of relevant analytical tools, which may discern biogenic silica derived from sponges skeletons from silica supplied by other sources. The proposed research project takes up the problem of the origin of Upper Jurassic chert nodules and bedded cherts, referred to a broad geological context. Apart from full mineralogical and petrographic characterization supported by specialized analytical methods, the genetic concepts of cherts will be confronted with the comprehensive, sedimentological, paleontological and tectonic characterization of a fragment of sedimentary basin belonging to the Tethyan northern margin.