

The silicon (Si) is not only the one of the most important component of the Earth crust, but also a key element of the water in marine environment (sea and ocean), where occurs as dissolved silicic acid. Its biogeochemical cycle influence not only on the evolution of siliceous organisms, but is also connected with biogeochemical cycles of other key elements of marine environments (e.g. carbon cycle). The previous research of the primary investigator indicate that the silicon concentration in a Late Cretaceous seawater influenced on the rock formation and took an important role in this process. In the epicontinental European Basin, which during Late Cretaceous has been located in the area corresponded to recent Europe, the Si-rich oceanic inflows from Atlantic and Tethys Oceans provided the Si to the basin and in some part of the basin generated its elevated concentration, which leading the opoka formation. This rock, which has been firstly described from Poland has been formed in a areas where due to high silicon concertation the siliceous sponges were developed, which after death deliver the silicon to the seabed mud leading to the formation of opoka. In the rest part of the basin where the silicon concentration where diminished the pure carbonate chalk has been formed. The main goal of the project is to reconstruct the spatial and temporal evolution of Si cycle in diverse marine environments of the Late Cretaceous European Basin. The aim of the project comprise: the identification of the Si sources in seawater (volcanic, hydrothermal, biogenic), reconstructions of the circulation of the silicon between seawater and porewater, determination of the pathways of influx of oceanic Si-rich water to the European Basin. The project will be realized through the detailed petrographic studies of Upper Cretaceous rocks, especially the insoluble residue (the minerals which will be left after the digestion of the rock in hydrochloric acid. The recognition of the Si cycle in Late Cretaceous is important for the interpretations for the modern environments, especially the role of siliceous sponges and burial in Si cycle.