

MINERALS OF SULPHUROUS SPRING SEDIMENTS FROM THE CARPATHIANS AND THE CARPATHIAN FOREDEEP

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In the Polish part of the Carpathians, 125 springs of sulphurous waters have been recorded (RAJCHEL, 2000), i.e. springs whose 1 dm³ of water contains more than 1 mg of iodometrically determined sulphur. On the bottoms of those springs and of their outflows characteristic deposits of sulphur bacteria occur (mainly *Chromatium*, *Thiothrix* and *Beggiatoa*), as well as mineral products of bacterial metabolism. The deposits develop as white, creamy, pink, purple and violet festoons, coatings and webs, underlain by a black sediment (STRZESZEWSKI, 1913; RAJCHEL, 1996).

The deposits studied were collected from springs of the Carpathians (Magura and Silesian Unit) and the Carpathian Foredeep. Based on X-ray analyses and observations in optical and scanning electron microscopes, it has been found that the mineral components of the white deposits include colloidal sulphur with grain sizes of some µm, sporadically occurring as larger accumulations of flakes, and gypsum in the form of euhedral crystals some hundred µm in size.

The purple and pink deposits represent colonies of photoautotrophic bacteria of the *Chromatium* sp. (JAROCKA & KŁOSOWSKA, 1966) coloured by bacteriopurpurine. They contain sulphur developed in the same manner as in the white deposits, as well as gypsum in the form of subhedral crystals some tens of µm in size, often in rosette like intergrowths. The black sediment is composed of dead organic matter with a small admixture of bacterial pyrite in accumulations up to 15 µm; sulphur and gypsum are also present but in amounts lower than in the deposits described above. Sulphur most often forms single grains with sizes of some µm; gypsum occurs as euhedral, anhedral as well as subhedral grains.

The white and white-creamy deposits called “*sulphur flowers*” represented the source of sulphur from ancient times and were also used for medicinal purposes (PAZDUR, 1960–61).

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