# Zeolitization of the Eastern Rhodopes acid tuffs, Bulgaria

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Eastern Rhodopes volcanic area, covering ca. 7000 $km^2$, is related to the alpine collisional volcanism. It consists in a bimodal association of rhyolitic lavas and tuffs intercalated with andesite-latite lavas of Late Eocene-Oligocene age.

New data on petrography, geochemistry, CEC measurements on zeolitized tuffs, and zeolite crystal chemistry aims to give a better understanding this process.

The economic potential of the Eastern Rhodopes tuffs is related to the deposits linked to air-fault tuffs and ignimbrites of the paroxismal 1st and 2nd acid volcanic phases, Lower Oligocene in age. Volcanic tuffs are intercalated within epiclastic sediments, these last becoming more abundant toward the top of the sequence.

Secondary minerals developed from the original volcanic glass in shards, pumice clasts and the matrix. Phenocrists are not affected. Major and trace element data show that the altered tuffs have preserved their primary collisional signatures. Secondary minerals consist in (Ca,K)-clinoptilolites (up to 90%), clay minerals, adularia and silica minerals. Mordenite is found in microdomains or in some small areas. At the bottom of the volcanic pile, zeolitization is pervasive; but some relict glass is found in the top of the second phase. Textural evidences also suggest that the origin of the alteration be linked to several aspects of water-rock interactions in a changing eruptive dynamics and environment during the Oligocene.

For the whole set of studied tuffs, the CEC values range between 13 and 153 meq/100g. The contribution of each authigenic component to the CEC value was estimated.