

The aim of the submitted project is the realization of the investigations associated with the formation of exfoliated graphite (EG) and exfoliated graphite intercalation compounds (EGIC) by ozone treatment of selected graphite intercalation compounds (GICs). Among the GICs subjected to ozone exfoliation will be graphite intercalation compound with sulfuric acid ( $\text{H}_2\text{SO}_4\text{-GIC}$ ), graphite intercalation compound with perchloric acid ( $\text{HClO}_4\text{-GIC}$ ), graphite intercalation compound with nickel chloride ( $\text{NiCl}_2\text{-GIC}$ ), graphite intercalation compound with iron chloride ( $\text{FeCl}_3\text{-GIC}$ ) and graphite bi-intercalation compound with nickel chloride and iron chloride ( $\text{NiCl}_2\text{-FeCl}_3\text{-GIC}$ ). The planned investigations associated with the synthesis of EG as well as  $\text{NiCl}_2\text{-EGIC}$ ,  $\text{FeCl}_3\text{-EGIC}$  and  $\text{NiCl}_2\text{-FeCl}_3\text{-EGIC}$  will be complemented by the wide characterization of the obtained materials, paying a special attention on the determination of their chemical composition and analysis of their structural, morphological and electrochemical properties. Since till now in the literature data there is no information on ozone exfoliation, so the planned investigations can be recognized as the investigations of a higher novelty. It is expected that the researches attempted within this project will result in formation of expanded graphite thus extending the knowledge in term of exfoliation as well as in term of the formation of carbon materials characterized by high activity from the chemical and electrochemical point of view. Since during the processes of EG formation by ozone treatment, the in-situ modification of its properties will occur, we hope that the planned investigations will result in better understanding of the processes associated with the carbon modification. Taking into account the subject matter of the planned research, the obtained results may also influence on the partial extension of knowledge within the field of science of graphene. Additionally, it is assumed that prepared by ozonation of graphite materials in an appropriate manner described and characterized, in the future, may be considered as interesting materials with a wide practical use in many areas of life and science.