Application of Modified with Copper Porous Carbon Matrix on Lead-Acid Battery

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Negative plates for the lead-acid battery with porous carbon grids coated with copper or copper and lead have been prepared and tested. In the first stage of the study a method of galvanic coating of the porous carbon matrix was developed. Analysis of the quality of the metal coatings was based on the results obtained with a scanning electron microscope. Measurement of the electrical conductivity for a series of collectors modified with various metal layers was also performed. Additionally, for the carbon matrix modified with a double metal layer of 20 µm Cu and 20 µm Pb a series of electrochemical measurements using cyclic voltammetry was performed to investigate its electrochemical properties and compared with a solid lead electrode. In the study a series of experimental cells was prepared in which the negative plate collector used: an unmodified carbon matrix, a carbon matrix modified with lead or copper and a carbon matrix modified with double metal, copper-lead layer.

Keywords: lead-acid battery, negative plate, carbon matrix, copper-lead

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