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Investigation of the effect of the microstructure of positive electrodes of chemical current sources on their functional characteristics

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This work presents the results of research carried out with the aim of conducting systematic studies of qualitative and quantitative patterns between the microstructure of electrode coatings and their specific characteristics. Information about the microstructure of coatings was obtained using small-angle thermal neutron scattering, which, due to the high penetrating power of this radiation, makes it possible to study industrial systems within the framework of non-destructive testing. Fundamentally new scientific and technical solutions for the formation of effective electrodes are based on the use of nanostructured conductive additives based on graphene derivatives and modified carbon nanotubes, as well as on the use of polymer binders with different structures. The results were obtained at the low-angle neutron scattering facility at the research reactor IBR-2 FLNP JINR. The influence of nanostructured carbon additives on the functional characteristics of chemical current sources has been evaluated. The paper also presents the results of the development of a prototype lithium-ion battery with increased specific characteristics.

Summary

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