

Influence of the applied potentials difference on structural and conductive properties of CoZnO nanotubes

Metal nanostructures based on d-metals have attracted considerable attention. They have unique physical properties, which differ from the corresponding bulk shapes, due to the size effect. The second factor explaining the relevance of these structures research is the broad application potential in nanoelectronics, as electronic blocks, sensors and devices with ultra-high memory density, etc. It is worth noting that nanostructures based on metals and their alloys also found their application in organic catalysis. Therefore, it is essential to investigate their properties and study how various factors affect the physical-chemical characteristics of the synthesized structures.

A series of CoZnO nanotubes was obtained by electrochemical deposition, with different atomic metal coefficients, due to a change in the applied potential difference. A systematic study of the morphology, structural and conductive properties of nanotubes was also carried out. It is established that the samples synthesized at the applied potentials difference of 1.5 and 1.75 V are three-component systems consisting of two oxide phases of ZnO and CoO_{1.92} cubic system and a phase of a solid solution of substitution Co_{0.65}Zn_{0.35} of hexagonal type. The samples synthesized at a potential difference of 2.0 V represent an alloy of two oxide phases, ZnO and CoO_{1.92}.

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