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VOLTAMMETRIC STUDIES OF $YBaCo_2O_5$ IN ALKALINE AQUEOUS SOLUTION

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Abstract

Electrochemical behaviour of $YBaCo_2O_5$ perovskite in alkaline solution was studied during oxygen insertion/release process. In correlation with electrochemical studies was analyzed the compound morphology and structure. Compound electrochemical oxidation consists in intercalation of oxygen atoms in crystalline structure, which is equivalent with a structure compaction. These results were correlated with the Brunauer-Emmett-Teller (BET) surface area of sample and also with SEM pictures.
Compaction of Y-112 crystalline structure during electrochemical oxidation leads at some partial irreversible character of studied process. Presence of a chemical step during electrochemical oxidation of studied perovskite was emphasized from electrochemical impedance data. This step was associated with O^{2-} ions formation. Based on the obtained results a mechanism of electrochemical oxidation/reduction of $YBaCo_2O_5$ perovskite in alkaline solution was proposed.

Key words: mixed oxides, $YBaCo_2O_5$, electrochemical behaviour of $YBaCo_2O_5$, cyclic voltammetry, BET technique

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