

Hydrous ruthenium oxide coating on Ti and carbon nanotube substrate for
the electrode of supercapacitor

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Abstract

In this study, hydrous ruthenium oxide was deposited on titanium(Ti) and carbon nanotube(CNT) substrate by cathodic deposition method. Combination of amorphous and nanocrystalline structure of hydrous ruthenium oxide was investigated by HRTEM for hydrous ruthenium oxide coating on Ti substrate and CNT substrate. The capacitance was found keeping nearly constant through charge/discharge processes for the coating on Ti substrate during charge/discharge processes. On the other hand, thin and uniform layer of hydrous ruthenium oxide coating can be deposited on CNT substrate. The thickness of the coating layer was found less than 10nm. The consumption of coating was found very effective for the hydrous ruthenium oxide coating on CNT substrate after 105 charge and discharge cycles. The capacitance was found decreasing tremendously through charge/discharge processes for the coating on CNT substrate.

Keyword : Hydrous ruthenium oxide, Carbon nanotube, Supercapacitor