

Synthesis and electrochemical characterization of TiO₂ materials

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An oxide (TiO₂) from anodization, can be used in a wide range of nanotechnology applications or incorporated into a specific simple method, such as chemical sensors. Most of the anodizing synthesis for such applications are made at high potential, but there is not much information available about synthesis of these oxides by low potential electrochemical techniques. In this paper, techniques of electrochemical impedance spectroscopy and polarization curves (potentiostatic and potentiodynamic) were used to study the growth of titanium oxide films on two different aqueous solutions, basic and acidic. The effect of the formation voltage, current density of formation and the nature of the passivation film was also investigated. The results show the growth of titanium oxide films of greater thickness and good stability in the NaF solution (1 M).

Keywords: titanium oxide, nanotechnology, electrochemical techniques.

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