

**PREPARATION AND CHARACTERIZATIONS TEXTILE COATED
TITANIUM DIOXIDE, TiO₂**

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ABSTRACT

PREPARATION AND CHARACTERIZATIONS COTTON COATED TITANIUM DIOXIDE, TiO₂.

Cotton coated titanium dioxide, TiO₂ was prepared by using immersion method. Three samples with different concentration which are 0.2 M, 0.5 M and 0.6 M of TiO₂ solution with fixed value of temperature and time immersion has been used in this project. Scanning Electron Microscope (SEM), X-Ray Diffraction (XRD) and Ultraviolet/Visible (UV-Vis) Spectrophotometer have been used to determine the properties of samples. The surface morphology of the cotton, crystalline phase of TiO₂ particles deposited on the cotton fiber and the amount of the TiO₂ particles dispersed in the water has been investigated. The existence of TiO₂ on the cotton fiber was identified by using SEM and XRD where the immersion method that has been used in this project contributed to the agglomerated TiO₂ particles on the surface of cotton fiber. None of the samples showed the formation of anatase crystalline phase of TiO₂ particle and UV-Vis showed the released of TiO₂ in the water was higher in the first immersion and decreased exponentially for the second, third and fourth immersion.

CHAPTER 1

INTRODUCTION

1.0 Introduction.

Titanium dioxide is a naturally occurring oxide of the titanium element, chemical formula TiO_2 . It also known as titanium (IV) oxide or titania which is can be found in three type of crystallographic form such as anatase, brookite and rutile. If titanium dioxide available in the form of anatase crystal, it can act as photocatalyst where it is the basic for self-cleaning effect, the anti-bacteria effect, the air cleaning properties and the other features of TitanShield-coating.

Titanium dioxide coating are used for self-cleaning on the surface, for air and water cleaning, for deodorization and for sterilization because it is able to kill viruses, spores and all kind of germs. Titanium dioxide is one of the whitest materials known to exist on Earth, which has earned it the nickname "titanium white". With the white color properties, it is often used in many cosmetic preparations to reflect light away from the skin.

It is also a major component of sun block to prevent the absorption of ultraviolet (UV) rays from the sun. In the food industry, titanium dioxide is used to enhance the white color of certain foods. It also lends brightness to toothpaste and some medications.