PREPARATION OF TITANIUM DIOXIDE FROM CHEMICAL POLYCONDENSATION: [Ti8O12 (H2O) 24] Cl8.7H2O.HCl and TiCl4 AS SOURCE OF TITANIUM SOURCES AND CHARACTERIZATION OF CHEMICAL PHYSICS AND APPLICATIONS FOR METHODIC RADIO

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ABSTRACT

Titanium dioxide is an n-type semiconductor that is widely used in various types of applications because it has the properties, among others: high chemical stability, non-toxic, and low production costs, so that it is applied traditionally in human life, including: dyes (pigment) white in paints, plastics, paper, textiles, leather tanning, and pharmaceuticals (capsule fillers, toothpaste and UV light absorbers in sun-protective creams, and cosmetics. Titanium dioxide is found to date as there are eleven allotropes, but in nature There are three phases of TiO2, namely anatas, rutile and brookit.Anatas and rutile are the most stable form of structure and both are produced on an industrial scale for various applications, including: photocatalysts, antibacterials, solar cells, and sensors.The aims of this study are (1) to produce TiO2 through controlling microstructure, optical properties and porosity den wet chemical polycondensation gan from titanium source precursors: [Ti8O12 (H2O) 24] Cl8 1) wet precipitation and (2) wet precipitation with the help of microwaves, under acidic or basic pH conditions using various chemicals: HNO3, NH4OH, and tetramethylamine. All TiO2 solids produced are characterized by microstructure, porosity and optical properties with XRD assistance, porimeter, and UV-Vis spectrophotometer. TiO2 powder with rutile (major) and anatas (very few) structural types resulted from TiCl4 reaction with H2O2 solution, while TiO2 powder with anatas type structure (52%) and rutile (48%). resulting from the reaction of ?Ti8O12 (H2O) 24?Cl8.HCl.7H2O with H2O2 solution. The TiO2 powder produced from the TiCl4 reaction with H2O2 has a BET surface area (SBET, Brunauer-Emmett-Teller), micropore volume and pore size of 133 m^2 / g , 0,0004cm^3 / g and 17.28 nm, while TiO2 powder with BET surface area (SBET, Brunauer-Emmett-Teller), micropore volume and pore size 152 m^2 / g, 0.0031cm^3 / g and 6.34 nm resulted from the ? reaction Ti8O12 (H2O) 24?Cl8.HCl.7H2O with H2O2.

Kata Kunci: *photocatalyst, titanium dioxide, photodegradation*