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TiO₂ SAMPLES"; "MORPHOLOGY AND MICROSTRUCTURE BY TEM AND HRTEM"; "STRUCTURE ANALYSIS"; "OPTICAL PROPERTIES OF RUTILE NANOSTRUCTURES"; "PHOTOCATALYTIC ACTIVITY OF PURE AND FE-DOPED RUTILE NANOPARTICLES"; "CONCLUSIONS"; "ACKNOWLEDGMENTS"; "REFERENCES"; "CHAPTER 4. THE FABRICATION OF RUTILE NANOPARTICLES AND HOLLOW MICROSPHERES WITH MESOPOROSITY"; "ABSTRACT"
"1. THE SYNTHESIS OF RUTILE NANOPARTICLE IN AQUEOUS SOLUTION"
"1.1. Introduction"; "1.2. Preparation of Rutile Nanoparticle"; "1.3. Characterization of Rutile Nanoparticles"; "1.4. Formation Mechanism of Rutile Nanocrystal"; "2. THE TRANSFORMATION PROCESS FROM ANATASE NANOPARTICLE TO NANORUTILE DURING CALCINATION"; "2.1. Introduction"; "2.2. Preparation of Nanoanatase"; "2.3. The Transformation Process from Anatase to Rutile"; "2.4. The Rate Competition Determines the Size Distribution and the Diameter of Anatase Nanoparticles during Calcinations"
"2.5. The Microstrain Determines the Rates of the Anatase Growth and the Transformation"
"3. THE FABRICATION OF RUTILE HOLLOW MICROSPHERES WITH MESOPOROSITY"; "3.1. Introduction"; "3.2. Sample Preparation"; "3.3. XRD"; "3.4. SEM"; "3.5. Specific Surface Area"; "3.6. UV Absorption"; "3.7. The Formation of the Hollow Structure"; "CONCLUSIONS"; "REFERENCES"; "CHAPTER 5. TITANIUM DIOXIDE UNDER AMBIENT AIR: PREPARATION AND PHOTOCATALYTIC PROPERTIES OF TiO₂ PRECIPITATED AEROSOLS"; "ABSTRACT"; "1. INTRODUCTION"; "2. EXPERIMENTAL"; "2.1. Tropospheric conditions"
"a). Gas phase composition of troposphere"

Sommario/riassunto

This book deals with the synthesis, properties and applications of titanium dioxide (TiO₂) which is a naturally occurring oxide of the element titanium. In nature these oxides are found in well-known minerals such as Rutile, Anatase and Brookite. However, it is most commonly extracted from titanium tetrachloride by carbon reduction and re-oxidization. Alternatively, it may be processed from another oxide called ilmenite, which is subjected to reduction with sulphuric acid to achieve pure titanium dioxide.
