

論文 / 著書情報
Article / Book Information

題目(和文)	
Title(English)	Photocatalytic Activity and Photoinduced Superhydrophilicity of Immobilized Nano-TiO ₂ Thin Films
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出典(和文)	学位:博士(工学), 学位授与機関:東京工業大学, 報告番号:甲第9937号, 授与年月日:2015年6月30日, 学位の種別:課程博士, 審査員:日野出 洋文,中崎 清彦,宮内 雅浩,大川原 真一,森 伸介
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学位種別(和文)	博士論文
Category(English)	Doctoral Thesis
種別(和文)	論文要旨
Type(English)	Summary

(博士課程)
Doctoral Program

論文要旨

THESIS SUMMARY

専攻 : Department of	International Development Engineering	専攻	申請学位 (専攻分野) : Academic Degree Requested	博士 (International Doctor of Development Engineering)
学生氏名 : Student's Name	Eden G. Mariquit		指導教員 (主) : Academic Advisor(main)	Prof. Hirofumi Hinode
			指導教員 (副) : Academic Advisor(sub)	

要旨 (英文 800 語程度)

Thesis Summary (approx.800 English Words)

The thesis is entitled “Photocatalytic Activity and Photoinduced Superhydrophilicity of Immobilized Nano-TiO₂ films”. It contains six chapters that were outlined and explained below:

Chapter 1 - Introduction. This chapter contained the Background of the Study, Statement of the Problem, Objectives of the Study, Significance of the Study and the Scope and Delimitations. These parts were significant in setting the scope of the study and in emphasizing the relevance of this research.

Chapter 2 - Review of Related Literature. This chapter contained the summary of past relevant researches that were used as references and were instrumental in identifying research gaps that have motivated this research.

Chapter 3 - Theoretical Framework. This chapter enumerated all the relevant theoretical concepts concerning photocatalysis, immobilization of TiO₂ and Fe-TiO₂ thin films.

Chapter 4 - Experimental Methodology. This chapter contained the flowchart of the experimental studies done by this research. All of the procedures on how to make the TiO₂ thin films and how to test their photocatalytic activity and surface wettability were written here.

Chapter 5 - Results and Discussions. This part discussed all the results of the characterization, activity testing and photoinduced wettability tests of TiO₂ thin films. FE-SEM, XRD, and TG-DTA were done for the TiO₂ thin films but additional XPS and UV transmittance spectra studies were conducted for Fe-TiO₂ films. Kinetic studies showed that the three and six-layer films followed the Langmuir-Hinshelwood kinetic model. For the films prepared with surfactants, addition of surfactants improved the photocatalytic activity of TiO₂ thin films and most of the prepared films became hydrophilic after exposure to UV light. Results of Fe-TiO₂ films study, including the characterization of the Fe-TiO₂ thin film, photocatalytic activity and photoinduced wettability under UV light were discussed in this chapter.

Chapter 6 - Conclusions and Recommendations. This part mainly answered the problem statements in Chapter 1. It concluded that the research was able to meet its objectives successfully however; it has also identified some points for improvement and consideration for future study.

Bibliography - The last part of the thesis listed all the reference which mainly consist of journals, books, and websites that were used in the study. The entries were written in APA style of referencing.

This thesis was presented to a distinguished examination panel composed of Tokyo Institute of Technology professors who are knowledgeable in this research field. The thesis was evaluated to have the originality and novelty to make a significant contribution to the field of photocatalysis. All of the members of the research panel approved that this study has satisfactorily met the requirements to merit a doctoral degree.

備考 : 論文要旨は、和文 2000 字と英文 300 語を 1 部ずつ提出するか、もしくは英文 800 語を 1 部提出してください。

Note : Thesis Summary should be submitted in either a copy of 2000 Japanese Characters and 300 Words (English) or 1copy of 800 Words (English).

注意 : 論文要旨は、東工大リサーチリポジトリ(T2R2)にてインターネット公表されますので、公表可能な範囲の内容で作成してください。

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