BIODIESEL PRODUCTION FROM WASTE SOURCES AS HETEROGENEOUS SOLID BASE CATALYST IN PALM OIL

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TABLE OF CONTENTS

		PAGE
ACKNOWLEDGMENT		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		vi
LIST OF FIGURES		vii
LIST OF ABBREVIATIONS		viii
ABSTRACT		ix
ABSTRAK		x
CHAPTER 1 INTRODUCTION		
1.1	Background of Study	1
1.2	Problem Statements	5
1.3	Significant of Study	6
1.4	Objectives of Study	7
CHAPTER 2 LITERATURE REVIEW		
2.1	Feedstock for Biodiesel	8
2.2	Method for Biodiesel Production	11
2.3	Catalyst	13
	2.3.1 Homogeneous Catalyst	13
	2.3.2 Heterogeneous Catalyst	14
	2.3.2.1 Egg Shells	15
	2.3.2.2 Crab Shells	16
2.4	Results from previous Study of Catalyst and Oils	17
CHAPTER 3 METHODOLOGY		
3.1	Materials and equipment	18
	3.1.1 Raw materials	18
	3.1.2 Reagents and Chemicals	18
	3.1.3 Instruments	19
3.2	Catalyst preparation	19
3.3	Methods	20
	3.3.1 Transesterification Reaction	20
	3.3.2 Determination of reusability of catalyst	21
	3.3.3 Determination of biodiesel conversion	21

	3.3.4 Methylation	22
	3.3.5 GC-MS analysis	22
3.4	Preparation and standardization of alcoholic potassium hydroxide (KOH)	23
3.5	Acid Value	23
3.6	Preparation and standardization of hydrochloric acid (HCl)	24
3.7	Saponification value	25

CHAPTER 4 RESULTS AND DISCUSSIONS

4.1	Waste shells of egg and waste shells of crab catalyst	27
4.2	Biodiesel production activity	28
4.3	Reaction and the reusability of the catalyst	31
4.4	Fatty acid composition	33
4.5	Acid value and saponification value	37

CHAPTER 5 CONCLUSIONS AND RECOMMENDATION 39

CITED REFERENCES 41
APPENDICES 44
CURICULUM VITAE 59

ABSTRACT

BIODIESEL PRODUCTION FROM WASTE SOURCES AS HETEROGENEOUSSOLID BASE CATALYST IN PALM OIL

Biodiesel has caught the public interest as a sustainable fuel and usually produced from vegetable oils by transesterification reaction using catalyst. Solid oxide catalyst derived from industrial waste shells of egg and waste shells of crab were used as catalyst in biodiesel production. Their catalytic activity as double sources catalyst for trasesterification of palm oil were investigated based on the different loading amount of combined catalyst and also the reusability of the catalyst. The waste shells were calcined with temperature of 900 °C, for 2 hours to transformed calcium species in the shells into active CaO catalyst. The experimental results showed the highest percent yield of FAME obtained is 62.8% from the optimum amount of catalyst used, 3.0 g in 10 g of oil in the transesterification reactions with methanol to oil ratio 12 : 1, reaction temperatures 65 °C and reaction times 2 hours. The spent catalysts that give highest percent yields can be reused for two times. These showed that abundant waste shells have potential to be used as catalyst in biodiesel production