

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

The growing fossil fuel consumption in the road transportation and other commercial sectors has explicit impact on environment,

.....

### **1.2 Problem statement**

.....

### **1.3 Scope of research**

.....

### **1.4 Research hypothesis**

Present research work was carried out in accordance with the following specific research hypothesis

- i. Natural .....
- ii. The .....

### **1.5 Objectives**

This research focuses on the following objectives

- i. To design.....
- ii. To produce .....
- iii. To analyze.....
- iv. To optimize .....

## **1.6 Organization of the thesis**

This thesis is structured in five correlated chapters in following order.

Chapter 1 provides introduction to .....

Chapter 2 discusses state of the art literature review in .....

Chapter 3 describes.....

Chapter 4 interprets the obtained results .....

Chapter 5 concludes the research and presents summary of research findings.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Background**

**Table 2.1:** Major feedstocks .....

Feedstock	Country(s) used for biodiesel production
Animal fat	Mexico, Canada, Ireland
Castor	Brazil
Yellow grease	Canada

Source: xxxxx.....

## **2.2 Summary of literature review and research gap**

The literature review indicates -----

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Materials**

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#### **3.2 XXXXX**

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----- research group.

#### **3.3 Summary of methodology**

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## **CHAPTER 4**

### **RESULTS AND DISCUSSION**

**4.1 -----**

**4.1.1 -----**

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**4.2 Summary of results and discussion**

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## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Conclusion**

- a. According -----
- b. -----

#### **5.2 Recommendations**

- a. -----
- b. -----.

## REFERENCES

- [1] Reddy, A. N. R., Saleh, A. A., Islam, M. D. S., & Hamdan, S. (2015). Methanolysis of Crude Jatropha Oil using Heterogeneous Catalyst from the seashells and Eggshells as Green Biodiesel. *Asean Journal on Science and Technology for Development*, 32(1), 16–30. <http://ajstd.org/~ajstd/index.php/ajstd/article/view/9/8>
- [2] Reddy, A. N. R., Saleh, A. A., Islam, M. S., Hamdan, S., & Maleque, M. A. (2016). Biodiesel Production from Crude Jatropha Oil using a Highly Active Heterogeneous Nanocatalyst by Optimizing Transesterification Reaction Parameters. *Energy & Fuels*, 30(1), 334–343. <https://doi.org/10.1021/acs.energyfuels.5b01899>
- [3] Reddy, A. N. R., Saleh, A. A., Islam, M. S., & Hamdan, S. (2017). Active Razor Shell CaO Catalyst Synthesis for Jatropha Methyl Ester Production via Optimized Two-Step Transesterification. *Journal of Chemistry*, 2017(1), 20. <https://doi.org/10.1155/2017/1489218>
- [4] Reddy, A. N. R., Saleh, A. A., Islam, S., & Hamdan, S. (2017). Optimization of Transesterification Parameters for Optimal Biodiesel Yield from Crude Jatropha Oil Using a Newly Synthesized Seashell Catalyst. *Journal of Engineering Science and Technology*, 12(10), 10.
- [5] Reddy, A. N. R., Saleh, A. A., Islam, S., Hamdan, S., Rahman, M. R., & Maşjuki, H. H. (2018). Experimental evaluation of fatty acid composition influence on Jatropha biodiesel physicochemical properties. *Journal of Renewable and Sustainable Energy*, 10(1), 20. <http://aip.scitation.org/doi/full/10.1063/1.5018743>

## **APPENDICES**

### **Appendix A: Data (if any)**

## **Appendix B: Publications(if any)**

- [1] Reddy, A. N. R., Saleh, A. A., Islam, M. D. S., & Hamdan, S. (2015). Methanolysis of Crude Jatropha Oil using Heterogeneous Catalyst from the seashells and Eggshells as Green Biodiesel. *Asean Journal on Science and Technology for Development*, 32(1), 16–30. <http://ajstd.org/~ajstd/index.php/ajstd/article/view/9/8>
- [2] Reddy, A. N. R., Saleh, A. A., Islam, M. S., Hamdan, S., & Maleque, M. A. (2016). Biodiesel Production from Crude Jatropha Oil using a Highly Active Heterogeneous Nanocatalyst by Optimizing Transesterification Reaction Parameters. *Energy & Fuels*, 30(1), 334–343. <https://doi.org/10.1021/acs.energyfuels.5b01899>
- [3] Reddy, A. N. R., Saleh, A. A., Islam, M. S., & Hamdan, S. (2017). Active Razor Shell CaO Catalyst Synthesis for Jatropha Methyl Ester Production via Optimized Two-Step Transesterification. *Journal of Chemistry*, 2017(1), 20. <https://doi.org/10.1155/2017/1489218>
- [4] Reddy, A. N. R., Saleh, A. A., Islam, S., & Hamdan, S. (2017). Optimization of Transesterification Parameters for Optimal Biodiesel Yield from Crude Jatropha Oil Using a Newly Synthesized Seashell Catalyst. *Journal of Engineering Science and Technology*, 12(10), 10.
- [5] Reddy, A. N. R., Saleh, A. A., Islam, S., Hamdan, S., Rahman, M. R., & Maşjuki, H. H. (2018). Experimental evaluation of fatty acid composition influence on Jatropha biodiesel physicochemical properties. *Journal of Renewable and Sustainable Energy*, 10(1), 20. <http://aip.scitation.org/doi/full/10.1063/1.5018743>