TABLE OF CONTENTS

Abstract

Acknowledgement

Preface

Foreword

- **1- VERY HIGH CYCLE FATIGUE**
- 1.1 Introduction
- 1.2 Very High Cycle Fatigue of Engineering Alloys
- 1.3 Current Understanding of VHCF
- 1.4 Conclusion
- 1.5 References
- 2- A REVIEW OF PIEZOELECTRIC FATIGUE MACHINES AND DEVELOPMENT
- 2.1 Introduction
- 2.2 Basic Construction of Ultrasonic Fatigue Machines
- 2.3 Stress and Amplitude in Specimen
- 2.4 Types Ultrasonic Fatigue Machines
- 2.5 Conclusions
- 2.6 References

3- INVESTIGATION OF VHCF CRACK INITIATION

- 3.1 Introduction
- 3.2 Stainless Steel Alloy AISI 310
- 3.3 S-N Curve of the Material
- 3.4 Characteristics of Fracture
- 3.5 Fatigue Crack Initiation

3.6 Conclusion

3.7 References

4- VERY HIGH CYCLE FATIGUE BEHAVIOUR OF SMALL SCALE NOTCHES IN AISI 310 STAINLESS STEEL

- 4.1- Introduction
- 4.2 Materials and Experimental Methods
- 4.3 Results and Discussion
- 4.4 Conclusion
- 4.5 References

5- EFFECT OF SURFACE TREATMENT ON THE CHARACTERISTICS OF ALLOYS UP TO VERY HIGH CYCLE FATIGUE

- 5.1 Introduction
- 5.2 Surface Treatment of Engineering Alloys
- 5.3 Materials Used in Fatigue Life Improvement Study
- 5.4 S-N Curves of the Materials
- 5.5 Fractography
- 5.6 Hardness Analysis
- 5.7 Conclusions
- 5.8 References
- 6- SUMMARY OF THE OVERALL STUDY AND RECOMMENDATIONS FOR FUTURE WORK
- 6.1 Conclusions
- 6.2 References