



**EFFECT OF LEADING EDGE (LE) TUBERCLES
ON SIDE MIRROR PERFORMANCE**

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TABLE OF CONTENTS

CONTENTS	PAGE
PAGE TITLE	
AUTHOR DECLARATION	i
SUPERVISOR CERTIFICATION	ii
COURSE COORDINATOR CERTIFICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	vi
TABLE OF CONTENT	vii
LIST OF TABLES	x
LIST OF FIGURES	xi

ABSTRACT

The tubercle effect is a recently discovered phenomenon where tubercles or large 'bumps' on the leading edge of an airfoil can improve its aerodynamics performance. This effect discovered when looking at the fins of humpback whales. These whales are the only known organisms to take advantage of the tubercle effect. It is believed that this effect allows them to be much more maneuverable in the water, allowing for easier capture of prey. The objective of this research is to study the effect of incorporating leading edge (LE) tubercles on side mirror whether it bring advantage or disadvantage in its performance. The overall performance of a car can be improved by improving the performance of side mirror. The design and simulation process are done using SolidWorks. Up five number of tubercles used in the design with gap ratio of 1:1, 1:2 and 1:3. The simulation are done by testing all design at high velocity which is from 20 m/s to 40 m/s. The investigation has shown that the tubercles can improve the performance of side mirror in reduction of drag. This proven by after comparing the drag coefficient of the side mirror with tubercles and without tubercles.