FINITE ELEMENT ANALYSIS OF MAXILLARY MOLAR DISTALIZATION WITH DISTALIZING FORCE

HADSAMANAN CHALERMWONG

AC MA **MASTER OF SCIENCE** IN ORTHODONTICS

GRADUATE SCHOOL CHIANG MAI UNIVERSITY MAY 2014

ht^{MAY 2014}reserve

FINITE ELEMENT ANALYSIS OF MAXILLARY MOLAR DISTALIZATION WITH DISTALIZING FORCE

HADSAMANAN CHALERMWONG

A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN ORTHODONTICS

Copyright Chiang Mai University GRADUATE SCHOOL, CHIANG MAI UNIVERSITY MAY 2014

MAY 2014 C S C V

FINITE ELEMENT ANALYSIS OF MAXILLARY MOLAR DISTALIZATION WITH DISTALIZING FORCE

HADSAMANAN CHALERMWONG

THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ORTHODONTICS

Examination Committee:

Advisory Committee:

(Assoc. Prof. Dr. Chairat Chalermrattanaroj) (Assoc. Prof. Dr. Boonsiva Suzuki)

(Assoc. Prof. Dr. Boonsiva Suzuki)

..... Member

(Assoc. Prof. Dr. Thongchai Fongsamootr)

Member 11 (Inde

(Dr. Eduardo Yugo Suzuki)

(Assoc. Prof. Dr. Thongchai Fongsamootr)

Mardo .Co-advisor (Dr. Eduardo Yugo Suzuki)

19 May 2014 Copyright © by Chiang Mai University

ACKNOWLEDGEMENT

I would like to express my sincere thanks to all of my advisors, Assoc. Prof. Dr. Boonsiva Suzuki, Dr. Eduardo Yugo Suzuki, and Assoc. Prof. Dr. Thongchai Fongsamootr for providing generous support, advice, and pushing me up to the goal of my Master's degree project.

I would like to acknowledge Faculty of Dentistry, Chiang Mai University, for the support in financial aid of this research. I wish to thank Dr. M. Kevin O Carroll, Professor Emeritus of the University of Mississippi School of Dentistry, USA and Faculty Consultant at Chiang Mai University Faculty of Dentistry, Thailand, for his assistance in the preparation of the manuscript.

I wish to express my appreciation to Prof. Dhirawat Jotikasthira and Assoc. Prof. Virush Pattanaporn for cheering and brightening me up throughout my study life.

My special thanks are also extended to all the staff of the Department of Orthodontics and Pediatric Dentistry, Faculty of Dentistry, Chiang Mai University, for their support and suggestions.

I would like to acknowledge the Hexa Ceram Co.,Ltd, Chiang Mai, Thailand for kindly support the 3D scanner (D800 3D Scanner, 3 shape) used in the present study.

My sincerest thanks to my friends (I-group), graduate students in Master of Science in Orthodontics program, for their assistance, cheerfulness and making my journal so memorable.

Lastly, I am deeply grateful to everyone in my family, who always give love, support and encouragement.

Hadsamanan Chalermwong