CONTENTS

ACKNOWLEDGMENTS II
ABSTRACT III
CONTENTS IV

CHAPTER 1 INTRODUCTION 1
1.1 Introduction to dye lasers 1
1.2 Review of solid-state dye lasers 3
1.3 Hot-press moulding of dye-doped PMMA 7
1.4 The present project 9

CHAPTER 2 LOW-PRESSURE-COMPRESSION MOULDING FOR 10
DYE-DOPED PMMA SLABS
2.1 Materials 10
  2.1.1 PMMA 10
  2.1.2 Laser dyes 12
  2.1.3 Solvents 13

CHAPTER 3 EXPERIMENTAL 26
3.1 Pumping of dye-doped PMMA slabs 26
3.2 Laser spectral measurements 28
3.3 Laser output energy measurements
3.4 Nitrogen lasers
3.5 Absorption and fluorescence measurements

CHAPTER 4 PERFORMANCE OF DYE-DOPED PMMA LASERS
4.1 Preliminary experiments
4.2 Effect of dye concentration, pumping energy and pumping power on laser efficiency
4.3 Effect of dye concentration on peak laser wavelength
4.4 Photo bleaching
4.5 Thermal degradation of dyes during fabrication
4.6 Summary

REFERENCES