CONTENTS

TERMINOLOGY

INTRODUCTION

1. THE HISTORY OF CHEMICAL MILLING
   1.1. Ancient history to the end of the seventeenth century. 1.2. The eighteenth and nineteenth centuries. 1.3. The twentieth century. References.

2. THE BASIC PRINCIPLES OF THE PROCESS
   2.1. Cleaning. 2.2. Masking. 2.3. Scribing. 2.4. Etching. 2.5. Demasking. References.

3. THE CHEMICAL MILLING OF VARIOUS MATERIALS

4. THE ENGINEERING BENEFITS OF USING CHEMICAL MILLING
   4.1. The benefits to the design engineer. 4.2. The benefits to the production engineer. References.

5. LIMITATIONS AND DIFFICULTIES WITH CHEMICAL MILLING
   5.1. Introduction. 5.2. What the process cannot do. 5.3. Problems of dimensional control. 5.4. Problems of surface finish. 5.5. Hydrogen embrittlement in titanium. 5.6. Plant design factors. 5.7. Health problems. References.

6. THE EFFECTS OF THE PROCESS UPON THE WORK-PIECE

7. APPLICATIONS OF CHEMICAL MILLING
   7.1. The aerospace industries. 7.2. The motor industry. 7.3. Miscellaneous applications in light engineering. 7.4. Architectural and decorative applications. References.

8. PHOTO-CHEMICAL MILLING
   8.1. The techniques involved. 8.2. Comparison of photo-chemical milling with metal stamping. 8.3. The accuracy of photo-chemical milling.
8.4. Applications to precision products. 8.5. The manufacture of printed circuits. 8.6. The application of PCM in the fabrication of integrated circuits. References.

9. THE CHEMISTRY INVOLVED

10. ECONOMICS

11. TOOLING FOR CHEMICAL MILLING
11.1. The requirements for chemical-milling templates. 11.2. Manufacturing the templates. 11.3. Supporting fixtures.

12. THE QUALITY CONTROL OF PARTS BEING PROCESSED IN INDUSTRIAL CHEMICAL MILLING

13. THE SKILLS INVOLVED AND TRAINING FOR THEM

14. THE EQUIPMENT FOR CHEMICAL MILLING

15. ENVIRONMENTAL CONSIDERATIONS
15.1. History and a review of the pollution question. 15.2. The practical problems of pollution control. 15.3. What companies involved in chemical milling should do. References.

16. FUTURE TRENDS AND DEVELOPMENTS

INDEX