

CONTENTS

1. INTRODUCTION

A new approach to inorganic polymers	
Definition of inorganic polymers	3
Special characteristic of inorganic polymers	5
Classification of inorganic polymers	13
History of inorganic polymers	19
References	20
Linear (Two-connective) Polymers	22

2. LINEAR (TWO-CONNECTIVE) POLYMERS

Polymeric Sulphur, Selenium and Tellurium	22
Polymeric selenium	25
Polymeric tellurium	27
Linear polyphosphates ('metaphosphates')	27
Polyphosphazenes	34
Polymeric sulphur nitride	38
Polycraboranes	39
References	43

3. THREE-CONNECTIVE NETWORK POLYMERS

Chalcogenide glasses	45
Ultraposphate glass	54
Boron nitride	68
References	70

4. NETWORKS OF MIXED THREE- AND FOUR-CONNECTIVITY

Borate glasses	72
Borphosphate glasses	79
References	90

5. FOUR-CONNECTIVE NETWORK POLYMERS	
Amorphous Four-connective Network Polymers	91
Vitreous silica and silicate glasses	91
Borosilicate glasses and glass-ceramics	104
Beryllium fluoride and the fluoroberyllates	107
Phosphorus oxynitride	109
Crystalline Four-connective Network Polymers	110
Crystalline silicates	110
Boron and aluminium phosphates	130
References	132
6. NETWORK POLYMERS OF MIXED CONNECTIVITY GREATER THAN FOUR	
Titanium, Zirconium, tin and cerium orthophosphates and orthoarsenates	136
Silicon phosphate and related polymers	141
References	143
7. INORGANIC POLYMER TECHNOLOGY	
Synthetic inorganic fibres	145
Cement	150
References	154
8. THE FUTURE FOR INORGANIC POLYMERS	
The outlook for inorganic materials	155
Extensions of present technology	157
The need for new technology	159
The need for basic research	161
References	161
Author Index	163
Subject Index	169