

CONTENTS

1	Gel formation: thermal behaviour and phase diagrams	
1.1	Introduction	5
1.2	Synthetic polymers	6
1.2.1	Solvent-induced gels	8
1.2.2	Crystallization-induced gels	47
1.3	Biopolymers	73
1.3.1	Neutral biopolymers	74
1.3.2	Charged biopolymers	91
1.3.3	Blends of biopolymers	96
2	Gel morphology and molecular structure: gelation mechanisms	
2.1	Introduction	98
2.2	Biopolymers	100
2.2.1	Gelatin gels	100
2.2.2	Polysaccharides	108
2.2.3	Blends of biopolymers	127
2.3	Synthetic polymers	128
2.3.1	Solvent-induced gels	129
2.3.2	Crystallization-induced gels	164
3	Mechanical properties and rheology	
3.1	Introduction	187
3.2	Synthetic polymers	190
3.2.1	Solvent-induced gels	190
3.2.2	Crystallization-induced gels	201
3.3	Biopolymers	211
3.3.1	Gelatin gels	211
3.3.2	Polysaccharides	216
3.3.3	Gels from blends of biopolymers	223
4	Concluding remarks	227

Appendices	
Appendix 1 Notions on phase diagrams	231
Appendix 2 Diffraction by helices	245
Appendix 3 Scattering by semi-rigid macromolecules	249
Appendix 4 Elasticity of rigid networks	256
References	259
Index	270