

CONTENTS

1. High – tech textiles : evolution or revolution	1
Composites	
2. Analysis and modeling of three – dimensional textile structural composites	22
3. Mechanics of three – dimensional braiding : basic requirements for process automation	34
4. Three – dimensional multilayer woven preforms for composites	53
5. Industrial applications of multiaxial warp knit composites	81
6. Design and fabrication of a braided composite monocoque bicycle frame	90
7. Linear low – density polyethylene filled with silane – coated wood fibers	102
Biomedical materials	
8. Fibers in medicine : from antiquity to the future	116
9. Textiles as bioimplants	124
10. The design and analysis of laminated degradable composite bone plates for fracture fixation	132
11. Analysis of textile – reinforced flexible composites	149
12. Recent advancements in suture fibers for wound closure	167
Protective clothing	
13. New third – generation protective clothing from high – performance polyethylene fiber : from knives to bullets	214
14. Polybenzimidazole blends in protective apparel	238
15. A new concept in temperature – adaptable fabrics containing polyethylene glycols for skiing and skiing – like activities	248
16. Thermal performance of wool and inherently flame – retardant fiber – blend fabrics	260
17. Printing technology for aramid fabrics	270
18. Measuring the effects of intense heat and dynamic mechanical forces on thermal protective fabrics	277
19. Melt – stick characteristics of flame – retardant – treated polyester – cotton blend fabrics	293
Geotextiles	
20. Polyester geotextiles : durability of polyethylene terephthalate fibers and fabrics	304
21. Stabilization of polypropylene fiber and tape for geotextiles	320
22. Impregnated fiber – glass yarn for high – strength geosynthetic reinforcement	337
23. The use of geotextiles in waste containment facilities	351
24. The use of geotextiles in transportation facilities	358
25. Chemical compatibility testing of geotextiles	376

Author index	384
Affiliation index	384
Subject index	385