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Control; 5.2 Lay-up Room Environment; 5.3 Tool Preparation; 5.4 Manual Lay-Up; 5.5 Ply Collation; 5.6 Flat Ply Collation and Vacuum Forming; 5.7 Automated Tape Laying; 5.8 Filament Winding; 5.9 Fiber Placement; 5.10 Vacuum Bagging; 5.11 Summary; 5.12 References; Chapter 6. Curing; 6.1 Cure of Epoxy Composites; 6.2 Theory of Void Formation; 6.3 Hydrostatic Resin Pressure Studies; 6.4 Chemical Composition Variables; 6.5 Net and Low Flow Resin Systems; 6.6 Resin and Prepreg Variables; 6.7 Lay-Up Variables; 6.8 Debulking Operations 6.9 Caul Plates and Pressure Intensifiers6.10 Condensation Curing Systems; 6.11 Residual Curing Stresses; 6.12 Exotherm; 6.13 In-Process Cure Monitoring; 6.14 Cure Modeling; 6.15 Summary; 6.16 References; Chapter 7. The Interaction of Chemical Composition and Processing on Laminate Quality; 7.1 Prepreg Physical Properties; 7.2 Chemical Properties; 7.3 Thermal Properties; 7.4 Rheological Properties; 7.5 Laminate Evaluations; 7.6 Summary; 7.7 References; Chapter 8. Adhesive Bonding and Integrally Cocured Structures; 8.1 Adhesive Bonding; 8.2 Theory of Adhesion; 8.3 Joint Design 8.4 Theory of Adhesion8.5 Joint Design; 8.6 Adhesive Testing; 8.7 Surface Preparation; 8.8 Epoxy Adhesives; 8.9 Bonding Procedures; 8.10 Sandwich Structures; 8.11 Honeycomb Core; 8.12 Honeycomb Processing; 8.13 Balsa Wood; 8.14 Foam Cores; 8.15 Syntactic Core; 8.16 Inspection; 8.17 Integrally Cocured Structure; 8.18 Summary; 8.19 References; Chapter 9. Liquid Molding; 9.1 Preform Technology; 9.2 Fibers; 9.3 Woven Fabrics; 9.4 Three-Dimensional Woven Fabrics; 9.5 Knitted Fabrics; 9.6 Stitching; 9.7 Braiding; 9.8 P4A Process; 9.9 Random Mat; 9.10 Preform Advantages; 9.11 Preform Disadvantages 9.12 Integral Structures Made by Textile Processes

Sommario/riassunto

One of very few books available to cover this subject area. A practical book with a wealth of detail. This book covers the major manufacturing processes for polymer matrix composites with an emphasis on continuous fibre-reinforced composites. It covers the major fabrication processes in detail. Very few books cover the details of fabrication and assembly processes for composites. This book is intended for the engineer who wants to learn more about composite processing: any one with some experience in composites should be able to read it. The author, who has 34 years