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Nota di contenuto	Cover; Handbook of metalinjection molding; Copyright; Contents; Contributor contact details; Preface; 1 Metal powder injection molding (MIM): key trends and markets; 1.1 Introduction and background; 1.2 History of success; 1.3 Industry structure; 1.4 Statistical highlights; 1.5 Industry shifts; 1.6 Sales situation; 1.7 Market statistics; 1.8 Metal powder injection molding market by region; 1.9 Metal powder injection molding market by application; 1.10 Market opportunities; 1.11 Production sophistication; 1.12 Conclusion; 1.13 Sources of further information; Part I Processing 2 Designing for metal injection molding (MIM)2.1 Introduction; 2.2 Available materials and properties; 2.3 Dimensional capability; 2.4 Surface finish; 2.5 Tooling artifacts; 2.6 Design considerations; 2.7 Sources of further information; 3 Powders for metal injection molding (MIM); 3.1 Introduction; 3.2 Ideal MIM powder characteristics; 3.3 Characterizing MIM powders; 3.4 Different MIM powder fabrication techniques; 3.5 Different alloying methods; 3.6 References; 4 Powder binder formulation and compound manufacture in metal injection molding (MIM); 4.1 Introduction: the role of binders 4.2 Binder chemistry and constituents4.3 Binder properties and effects on feedstock; 4.4 Mixing technologies; 4.5 Case studies: lab scale and commercial formulations; 4.6 References; 5 Tooling for metal injection molding (MIM); 5.1 Introduction; 5.2 General design and function of injection molding machines; 5.3 Elements of the tool set; 5.4 Tool

design options; 5.5 Special features and instrumentation; 5.6 Supporting software and economic aspects; 5.7 Sources of further information; 6 Molding of components in metal injection molding (MIM); 6.1 Introduction; 6.2 Injection molding equipment 6.3 Auxiliary equipment 6.4 Injection molding process; 6.5 Common defects in MIM; 6.6 References; 7 Debinding and sintering of metal injection molding (MIM) components::; 7.1 Introduction; 7.2 Primary debinding; 7.3 Secondary debinding; 7.4 Sintering; 7.5 MIM materials; 7.6 Setting; 7.7 MIM furnaces; 7.8 Furnace profiles; 7.9 Summary; 7.10 Acknowledgements; 7.11 References; Part II Quality issues; 8 Characterization of feedstock in metal injection molding (MIM); 8.1 Introduction; 8.2 Rheology; 8.3 Thermal analysis; 8.4 Thermal conductivity; 8.5 Pressure-volume-temperature (PVT) 8.6 Conclusions 8.7 Acknowledgments; 8.8 References; 9 Modeling and simulation of metal injection molding (MIM); 9.1 Modeling and simulation of the mixing process; 9.2 Modeling and simulation of the injection molding process; 9.3 Modeling and simulation of the thermal debinding process; 9.4 Modeling and simulation of the sintering process; 9.5 Conclusion; 9.6 References; 10 Common defects in metal injection molding (MIM); 10.1 Introduction; 10.2 Feedstock; 10.3 Molding; 10.4 Debinding; 10.5 Sintering; 10.6 Conclusion; 10.7 References; 11 Qualification of metal injection molding (MIM) 11.1 Introduction

Sommario/riassunto

Metal injection molding combines the most useful characteristics of powder metallurgy and plastic injection molding to facilitate the production of small, complex-shaped metal components with outstanding mechanical properties. The Handbook of metal injection molding provides an authoritative guide to this important technology and its applications. Part one discusses the fundamentals of the metal injection molding process with chapters on topics such as component design, important powder characteristics, compound manufacture, tooling design, molding optimization, debinding, and sintering
