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Nota di contenuto	List of Contributors ix -- Introduction xi -- 1 A Predictive Model for Whisker Formation Based on Local Microstructure and Grain Boundary Properties 1 /Pylin Sarobol, Ying Wang, Wei-Hsun Chen, Aaron E. Pedigo, John P. Koppes, John E. Blendell and Carol A. Handwerker -- 1.1 Introduction, 1 -- 1.2 Characteristics of Whisker and Hillock Growth from Surface Grains, 3 -- 1.3 Summary and Recommendations, 17 -- Acknowledgments, 18 -- References, 19 -- 2 Major Driving Forces and Growth Mechanisms for TinWhiskers 21 /Eric Chason and Nitin Jadhav -- 2.1 Introduction, 21 -- 2.2 Understanding the Mechanisms Behind Imc-Induced Stress Evolution and Whisker Growth, 24 -- 2.3 Relation of Stress to Whisker Growth, 34 -- 2.4 Conclusions, 39 -- Acknowledgments, 40 -- References, 40 -- 3 Approaches of Modeling and Simulation of Stresses in Sn Finishes 43 /Peng Su and Min Ding -- 3.1 Introduction, 43 -- 3.2 Constitutive Model, 44 -- 3.3 Strain Energy Density, 46 -- 3.4 Grain Orientation, 46 -- 3.5 Finite Element Modeling of Triple-Grain Junction, 48 -- 3.6 Finite Element Modeling of Sn Finish with Multiple Grains, 55 -- References, 66 -- 4 Properties and Whisker Formation Behavior of Tin-Based Alloy Finishes 69 /Takahiko Kato and Asao Nishimura -- 4.1 Introduction, 69 -- 4.2 General Properties of Tin-based Alloy Finishes (Asao Nishimura), 70 -- 4.3 Effect of Alloying

Elements on Whisker Formation and Mitigation (Asao Nishimura), 75 -- 4.4 Dependence of Whisker Propensity of Matte Tin / Copper Finish on Copper Lead-Frame Material (Takahiko Kato), 89 -- 4.5 Conclusions, 118 -- Acknowledgments, 118 -- References, 119 -- 5 Characterization Techniques for Film Characteristics 125 /Takahiko Kato and Yukiko Mizuguchi -- 5.1 Introduction, 125 -- 5.2 TEM (Takahiko Kato), 125 -- 5.3 SEM (Yukiko Mizuguchi), 140 -- 5.4 EBSD (Yukiko Mizuguchi), 146 -- 5.5 Conclusions, 154 -- Acknowledgments, 155 -- References, 155 -- 6 Overview of Whisker-Mitigation Strategies for High-Reliability Electronic Systems 159 /David Pinsky. 6.1 Overview of Tin Whisker Risk Management, 159 -- 6.2 Details of Tin Whisker Mitigation, 164 -- 6.3 Managing Tin Whisker Risks at the System Level, 173 -- 6.4 Control of Subcontractors and Suppliers, 183 -- 6.5 Conclusions, 185 -- References, 185 -- 7 Quantitative Assessment of Stress Relaxation in Tin Films by the Formation of Whiskers, Hillocks, and Other Surface Defects 187 /Nicholas G. Clore, Dennis D. Fritz, Wei-Hsun Chen, Maureen E. Williams, John E. Blendell and Carol A. Handwerker -- 7.1 Introduction, 187 -- 7.2 Surface-Defect Classification and Measurement Method, 189 -- 7.3 Preparation and Storage Conditions of Electroplated Films on Substrates, 194 -- 7.4 Surface Defect Formation as a Function of Tin Film Type, Substrate, and Storage Condition, 195 -- 7.5 Conclusions, 209 -- Appendix, 209 -- Acknowledgments, 209 -- References, 213 -- 8 Board Reflow Processes and their Effect on Tin Whisker Growth 215 /Jasbir Bath -- 8.1 Introduction, 215 -- 8.2 The Effect of Reflowed Components on Tin Whisker Growth in Terms of Grain Size and Grain Orientation Distribution, 215 -- 8.3 Reflow Profiles and the Effect on Tin Whisker Growth, 216 -- 8.4 Influence of Reflow Atmosphere and Flux on Tin Whisker Growth, 219 -- 8.5 Effect of Solder Paste Volume on Component Tin Whisker Growth during Electronics Assembly, 220 -- 8.6 Conclusions, 221 -- Acknowledgments, 222 -- References, 222 -- 9 Mechanically Induced Tin Whiskers 225 /Tadahiro Shibutani and Michael Osterman -- 9.1 Introduction, 225 -- 9.2 Overview of Mechanically Induced Tin Whisker Formation, 227 -- 9.3 Theory, 228 -- 9.4 Case Studies, 237 -- 9.5 Conclusions, 245 -- References, 246 -- Index 249.

Sommario/riassunto

Discusses the growth mechanisms of tin whiskers and the effective mitigation strategies necessary to reduce whisker growth risks This book covers key tin whisker topics, ranging from fundamental science to practical mitigation strategies. The text begins with a review of the characteristic properties of local microstructures around whisker and hillock grains to identify why these particular grains and locations become predisposed to forming whiskers and hillocks. The book discusses the basic properties of tin-based alloy finishes and the effects of various alloying elements on whisker formation, with a focus on potential mechanisms for whisker suppression or enhancement for each element. Tin whisker risk mitigation strategies for each tier of the supply chain for high reliability electronic systems are also described. . Discusses whisker formation factors including surface grain geometry, crystallographic orientation-dependent surface grain boundary structure, and the localization of elastic strain/strain energy density distribution. Examines how whiskers and hillocks evolve in time through real-time studies of whisker growth with the scanning electron microscope/focused ion beaming milling (SEM/FIB). Covers characterization methods of tin and tin-based alloy finishes such as transmission electron microscopy (TEM), scanning electron microscopy (SEM), and electron backscatter diffraction (EBSD). Reviews theories of mechanically-induced tin whiskers with case studies using pure tin and

other lead-free finishes shown to evaluate the pressure-induced tin whiskers Mitigating Tin Whisker Risks: Theory and Practice is intended for the broader electronic packaging and manufacturing community including: manufacturing engineers, packaging development engineers, as well as engineers and researchers in high reliability industries.
