

Materials for Advanced Packaging

Daniel Lu • C.P. Wong
Editors

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 Springer

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ISBN: 978-0-387-78218-8 e-ISBN: 978-0-387-78219-5
DOI: 10.1007/978-0-387-78219-5

Library of Congress Control Number: 2008932162

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Printed on acid-free paper

springer.com

Preface

With consistently active involvement in the electronic packaging conferences such as the IEEE Electronic Components and Technology Conference (ECTC) in the last several years, we have witnessed many advances in advanced electronic packaging technology, especially in materials and processing aspects. We have come to the decision to prepare this book so that readers can learn these recent advances in electronic packaging.

This book provides a comprehensive review on the most recent developments in advanced packaging technologies including emerging technologies such as 3 dimensional (3D), nanopackaging, and biomedical packaging with a focus on materials and processing aspects.

This book consists of 19 chapters which are written by well recognized experts in each field. Chapter 1 reviews various 3D package architectures, and processes and materials to enable these 3D packages. Chapter 2 provides an overview on several new bonding and joining techniques to make large area void-free bonding interface for electrical and/or mechanical interconnections. Chapter 3 reviews some novel approaches to make electrical interconnects between integrated circuit (IC) and substrates to improve both electrical and mechanical performance. Most recent developments in wire bonding are covered extensively in Chapter 4. Various wafer thinning techniques and associated materials and processing are reviewed in Chapter 6. Latest advances in several key packaging materials including lead-free solders, flip chip underfills, epoxy molding compounds, conductive adhesives, die attach adhesives/films, and Thermal Interface Materials (TIMs) are reviewed in great detail in Chapters 5, 9, 10, 11, 12, and 13, respectively. Advances on organic substrate and printed circuit boards are covered in Chapters 7 and 8, respectively. Chapter 14 reviews the materials advent on embedded passives including capacitors, inductors and resistors. Chapters 16 and 17 review the advent in materials and processing aspects on MicroElectroMechanical System (MEMS) and wafer level chip scale packaging, respectively. Emerging technologies such as nanopackaging, Light Emitting Diode (LED) and optical packaging, and biomedical packaging are covered in Chapters 15, 18 and 19, respectively.

We greatly thank all the contributors for their efforts to bring this wonderful book to the readers.

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