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Many recent advances in technology have been associated with nanotechnology and the miniaturization of components, devices and systems. Microjoining has been closely associated with the evolution of microelectronic packaging, but actually covers a much broader area, and is essential for manufacturing many electronic, precision and medical products.

Part 1 reviews the basics of microjoining, including solid-state bonding and fusion microwelding. Part 2 covers microjoining and nanojoining processes, such as bonding mechanisms and metallurgy, process development and optimization, thermal stresses and distortion, positioning and fixturing, sensing, and numerical modelling. Part 3 discusses microjoining of materials such as plastics, ceramics, metals and advanced materials such as shape memory alloys and nanomaterials. The book also discusses applications of microjoining such as joining superconductors, the manufacture of medical devices and the sealing of solid oxide fuel cells.

This book provides a comprehensive overview of the fundamental aspects of microjoining processes and techniques. It will be a valuable reference for production engineers, designers and researchers using or studying microjoining technologies in such industries as microelectronics and biomedical engineering.