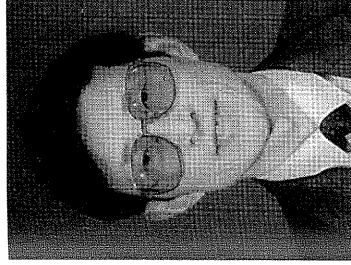


Special Issue on Wafer Bonding and Its Applications

Preface



Wafer bonding and layer transfer technology has emerged as a versatile approach for research and development of integrated materials and devices. It does not only provide a flexible way to prepare integrated materials but also appears to be one of the fundamental technologies for three-dimensional (3-D) device fabrication and for integration of partially or fully processed dissimilar functional layers including sensors and actuators. The integration of dissimilar functions including input sensors, signal processing units and output drivers provides a promising solution to realize microsystems or a system on a 3-D chip in which multifunctional layers are interconnected. Methods that form strong bonds between required materials at low temperatures and transfer a layer by cutting the material or device layer without compromising the device integrity by VLSI compatible processes are discussed in papers 1 and 2. The bonding interface quality has to be inspected and an infrared technology was developed that is reported in paper 3. The final paper introduces a bonding technique for the preparation of 3-D photonic crystals that is important for novel light sources.

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