Novel SU-8 based vacuum wafer-level packaging for MEMS devices

This work presents a simple and low-cost SU-8 based wafer-level vacuum packaging method which is CMOS and MEMS compatible. Different approaches have been investigated by taking advantage of the properties of SU-8, such as chemical resistance, optical transparency, mechanical reliability and versatility. A novel technique of wafer level adhesive bonding, which uses SU-8 as structural and adhesive material, has been developed and successfully demonstrated. Optical inspection and SEM images were used in order to measure the package lid bending and probe the encapsulation sealing. In addition, an indirect vacuum level measurement has been carried out by comparing the different quality factors of a test cantilever resonator when this element is packed or unpacked.

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