

## Solid liquid interdiffusion (SLID) wafer-level bonding for MEMS packaging

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Solid liquid interdiffusion (SLID) wafer-level bonding is a promising strategy for system integration, as it enables use of low-cost metallization, flux-free bonding, fine-pitch micro-interconnects, encapsulation and probably the most important aspect namely repeated stacking/integration without re-melting the previously bonded materials. The bonding technique is based on the rapid formation of intermetallic(s) between two metal components, one being a low-melting and the second a high-melting component. The bonding temperature is usually kept above the melting point of low-melting component. The layer thicknesses are designed such that the low-melting metal is completely consumed in the process, leaving a final bond-line of intermetallic compound(s) with a higher re-melting temperature than the initial bonding temperature. In this talk, I will present about my PhD work about low-cost, low-temperature and high performance SLID wafer-level bonding for MEMS encapsulation and interconnects for harsh environment applications.

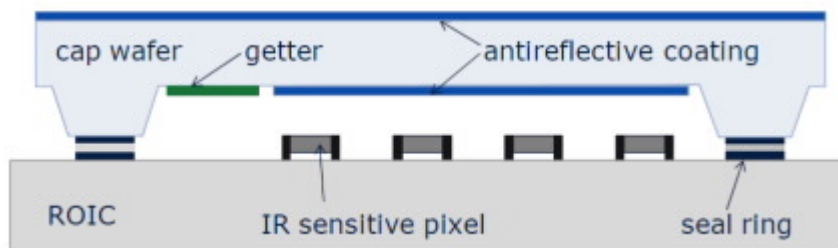


Figure: A typical structure of hermetic encapsulation of MEMS devices, A. Lapadatu et al. ECS 2010

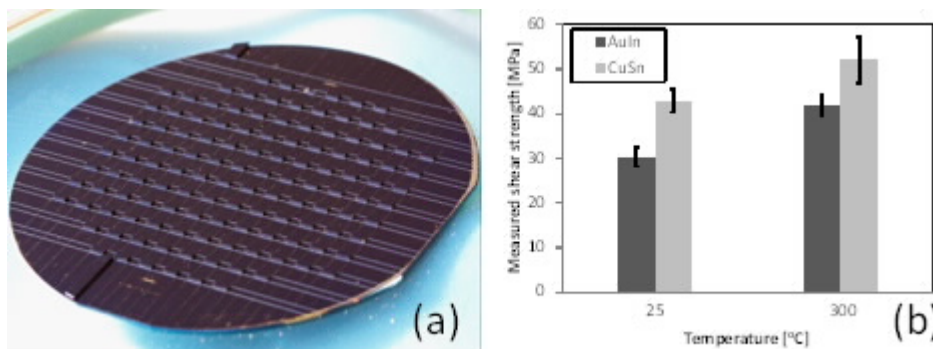


Figure: (a) A wafer-bonded sample with 100 % dicing yield. (b) Measured shear strength of Cu-Sn and Au-In SLID wafer-level bonded sample at room temperature (25°C) and 300°C.

### References:

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