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**Novel Room-Temperature First-Level Packaging Process for Micro- and Nanoscale Devices**

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**Abstract**

The aim of this project is the development of a novel room-temperature method for room-temperature wafer-level encapsulation of MEM (micro-electro-mechanical) and NEM (nano-electro-mechanical) devices. Typically, wafer-level encapsulation is referred to as “first-level” packaging. Our prior work, funded by PITA, focused on a bonding method that used the cold-welding technique as its basis. Even though cold-welding has been known since ancient times, it has not been frequently applied in the MEMS field. We managed to implement it successfully for the bonding of silicon-silicon and silicon-glass wafers by applying a limited load (~3kPa). Partner companies include Coventor, Inc. (Cary, NC).