Redistribution Layers on Glass Wafers

CNF Project Number: 3018-22
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Primary Source(s) of Research Funding: Commercial revenue from early prototypes

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Primary CNF Tools Used: Photolithography suite (both spinning and laminating photosensitive materials, and align & develop), CHA Mark50 for evaporation of metals, thermocompression bonder

Abstract:

Mosaic Microsystems is a small company with cleanroom facilities in Rochester NY, specializing in thin glass interposers for the microelectronic packaging industry. Mosaic has used CNF primarily for early exploration of interconnect metallizations. As a small company bringing up many processes simultaneously in-house, Mosaic was grateful for the already-functional facilities offered by the CNF to be able to explore tools and processes for early prototypes. For a variety of customer projects, some one-off and others early versions of processes that may become main-stream for Mosaic, the access to good equipment that is well maintained accelerated our delivery and helped build our business.

Summary of Research:

Mosaic has a proprietary process for bonding thin glass to a handle wafer, allowing the thin glass to be processed in mainstream semiconductor equipment. Mosaic used CNF to metallize and pattern such bonded glass wafers with platinum, copper, aluminum, tantalum, titanium, and gold. In some cases, Mosaic used the thermocompression bonder to create multilayer glass stacks. Even such relatively "standard" processes must be adapted for new materials, and Mosaic has been very grateful to have the Cornell NanoScale Facility relatively near-by to allow explorations when we have not yet been able to bring similar equipment up in our own cleanrooms.

Conclusions:

In the world of semiconductor packaging, small companies face a significant challenge in acquiring sufficient capital equipment to build the business at a rate that allows the business to grow. Having access to the CNF equipment and expertise has been highly valuable.