Advanced Semiconductor Repair Enabled by HPCaP

Hummink's High Precision Capillary Printing (HPCaP) technology enables micron and sub-micron precision for advanced semiconductor repair applications. Designed for high-accuracy material deposition on complex and sensitive structures, HPCaP minimizes material waste while overcoming the limitations of conventional repair methods.

- Micron & sub-micron precision deposition
- Minimizes material waste vs. conventional methods
- Adapts to complex & sensitive structures
- Full process control & repeatability

Discover how HPCaP supports next-generation semiconductor repair with exceptional precision, flexibility, and process control.

APPLICATION 01

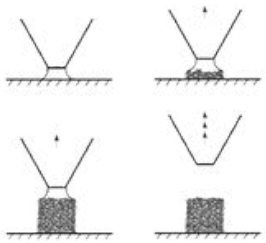
Flip Chip and Bumps for Repair

Industry Challenges

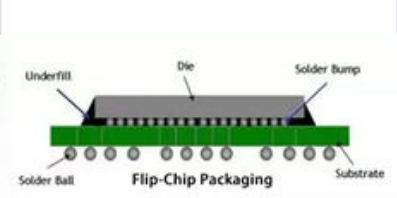
- Missing bumps cannot be repaired with existing tools
- Conventional lithography limits aspect-ratio flexibility

Solution with HPCaP

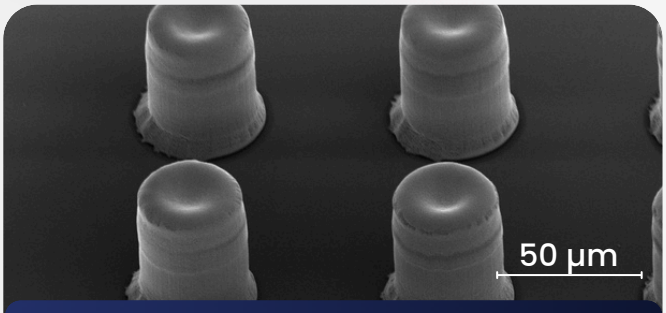
- High-precision, localized bump repair
- Adapts to a wide range of aspect ratios



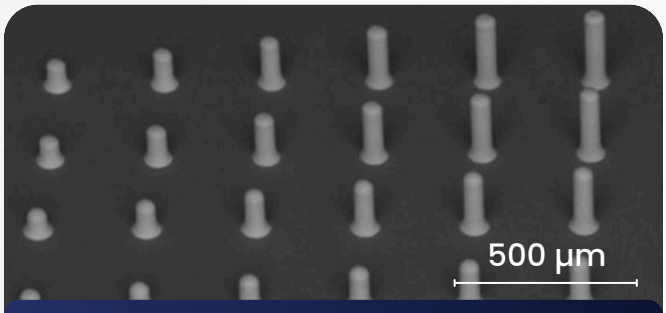
Capillary Printing Process



Flip Chip Packaging



Silver bumps



Varying aspect ratio

APPLICATION 02

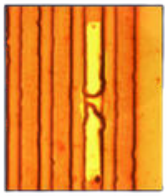
RDL Repair with Hanyang University

Industry Challenges

No capacity to repair open defects **< 5 µm** with conventional methods in redistribution layers (RDL)



Optical image before TCT*



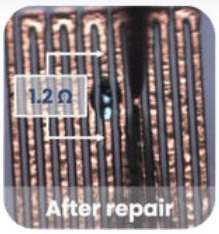
Optical image after TCT

*Temperature Cycling Test

Solution with HPCaP

- Local deposition at the micron scale with excellent electrical performance
- Same failure threshold as a fresh deposit: **600 cycles**



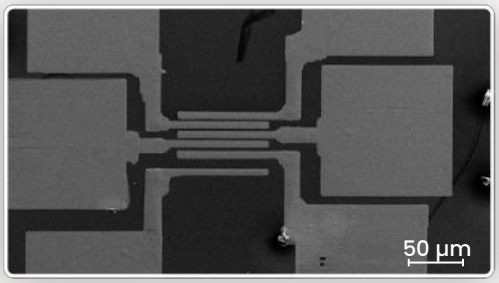


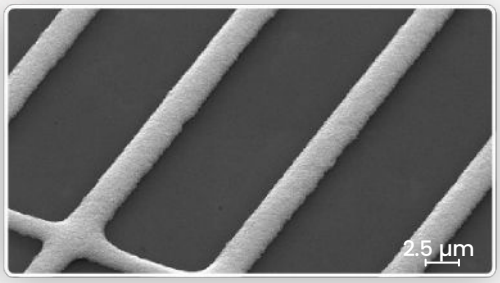
40 µm Cu RDL repaired

125°C
Thermal cycling

600
Cycles to failure







About Hummink

HHummink is the exclusive developer and supplier of High Precision Capillary Printing (HPCaP), a patented technology enabling micron-scale material deposition for advanced electronics manufacturing. From R&D to industrial production, our integrated solution combines printing systems, intelligent software, and proprietary inks.

Already adopted by leading industrial and research organizations across Europe, Asia, and the US, HPCaP enables enables next-generation manufacturing and repair applications in displays, semiconductors, and advanced packaging. Learn more at www.hummink.com or follow us on LinkedIn.

contact@hummink.com
3 Impasse de la Planchette, 75003 Paris

HUMMINK

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