

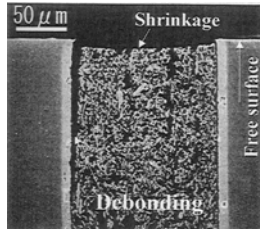
ICA Microvias: Ag, Cu, & LMP (Low Melting Point) Alloy

[Das et al (Endicott Interconnect), ECTC'06]

Adhesive	90 Degree Peel strength (lbs/inch)	Tensile Strength (PSI)	Failure Mode
Low melting point (LMP) Alloy	1	600	Cohesive
Copper (Cu)	1.77	2056	Cohesive
Silver (Ag)	2.75	Cohesive	

Table 1: 90 degree peel strength and tensile strength of adhesives

Failure modes →



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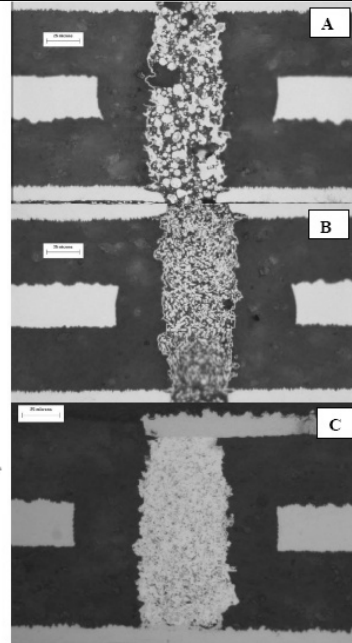
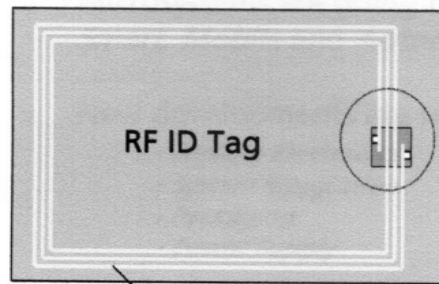


Figure 8: Adhesive-filled joining cores (A) LMP, (B) Cu, and (C) silver

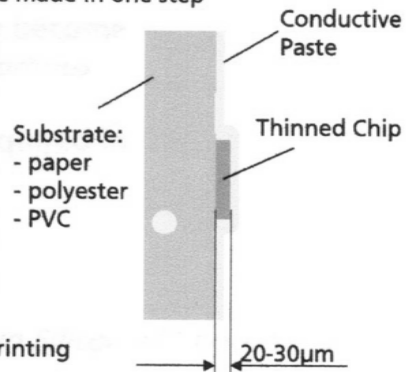
ICA Smart Cards & RF ID (IZM-Berlin)

Isoplanar Contacting Method

→ Coil + contacts can be made in one step



Coil: applied by stencil printing or dispensing



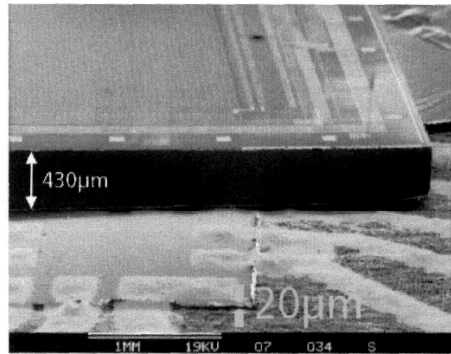
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Isoplanar Contacts of Ultra Thin ICs

Benefits of interconnection technology of Ultra Thin IC:

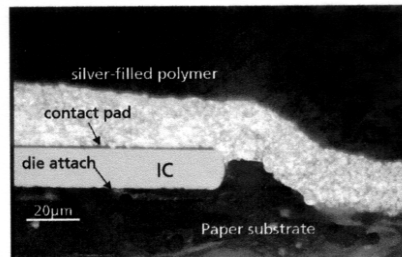
- Low topography of thinned IC allows isoplanar interconnection, e. g. by screen printing
- Electronic products become bendable
- Electronic label is compatible to paper processing (lamination, printing, ...)



Thinned IC compared to usual IC thickness

Cross-section of an Isoplanar Contact

Electrical interconnection is achieved by screen printing of silver-filled polymer across chip edge



Thinned Chip RF ID (IZM-Berlin)

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(Sintered NanoParticle) ICA Die Attach

[Bai et al (VaTech), HDP'05]

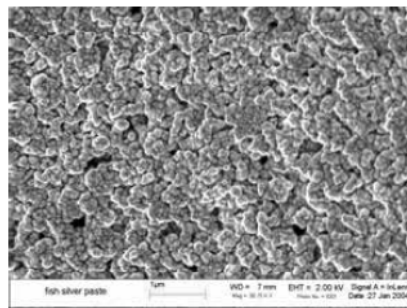


Fig. 2. SEM images of the nanoscale silver on a silic substrate after sintering at 280°C for 10 mins.

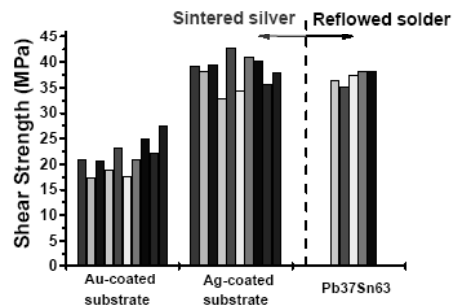


Fig. 8. The comparison of the shear strength of the low-temperature silver-sintering with solder reflow.

Also Ink-Jettable for interconnect and adhesives in future

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