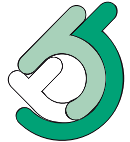
Wafer Through Via using Cu



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NBT has developed process sequences for wafer via filling using Cu electroless plating and electroplating technology. The sequence can be applied for through hole filling or blind hole filling. Depending on the sequence variations, single-side or double-side planarisation steps are required.

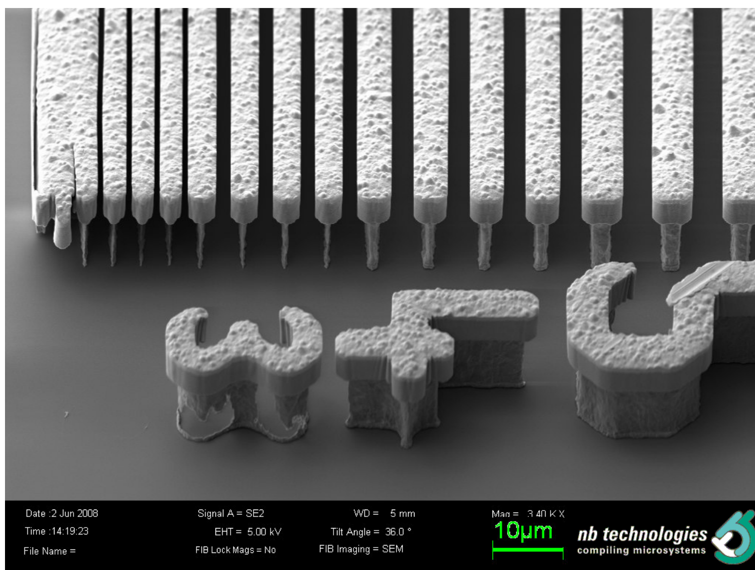
As alternative to specific technologies such as MOCVD or electrografting, the sequence bases on electroless seed formation with Ni onto silicon, which is deposited on a dielectric, and subsequent Ni-silicide formation.

The process sequence comprises

- side wall isolation (thermal oxide, LPCVD nitride, …)
- seed layer by electroless Ni, electroless Cu
- filling by electroless Cu (through hole)
- filling by electroplating Cu (blind hole)

Major benefits

- superior adhesion to sidewall (+ hermicity and reliability at thermal cycling)
- void-free fill
- batch processing of Cu fill (through hole fill)
- high aspect ratio (>10:1)



- through via 60µm diameter
- wafer thickness 600µm
- filled with electroless Cu

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