Electroplating Solutions

nb technologies
consulting engineers

NBT has designed specialized electroplating solutions based on many years of engineering experience and application expertise for microsystem technology, semiconductor industries, PCBs and photovoltaic technologies.

Product	Application	Features
NB Semiplate Au 100	Bond pads, surface finish	**very** stable bath, sulfite based, **very** uniform thickness, **very** shiny surface, arsenite grain refiner, room temperature plating
NB Semiplate Au 100 TL	Bond pads, surface finish	**free of arsenite**, bright surface, **very** stable bath, sulfite based, **very** uniform thickness, room temperature plating
NB Semiplate Au 200	Bond pads, surface finish	**free of arsenite**, semi bright surface, **very** stable bath, sulfite based, **very** uniform thickness, high rate, room temperature plating
NB Semiplate Cu 100	Conducting lines Sacrificial layers	sulfuric acid based, shiny surface, uniform thickness, low stress
NB Semiplate Cu 150	Conducting lines Sacrificial layers	designed for **inert anode** process, sulfuric acid based, shiny surface, uniform thickness
NB Semiplate Sn 100	Soldering, surface finish	MSA based, good bonding
NB Semiplate Sn 150	Soldering, surface finish	designed for **inert anode** process, MSA based, good bonding
NB Semiplate Ni 100	Mechanical elements, Barrier layer	high purity bath and deposit, medium temperature plating, low stress, controlled mechanical properties
NB Semiplate NiMn 100	Mechanical elements in high temperature application (switches, relays, tethers)	low-creep Ni, stable grain size under temperature and mechanical load
NB Semiplate In 100	Soldering or bonding	alkaline, non-cyanide, matte, fine-grained, surface
NB Semiplate Ag 100	Conductors, surface finish	alkaline, **cyanide-free Ag**, compatible with resist mask
Nb Semiplate Bi 100	Absorbers in space applications	pure bismuth plating solution
NB Semiplate Pd 200	Barrier, surface finish	alkaline bath, 0,3 to 1µm thickness, compatible with resist
NB sunNiSi 100	**Porous Si** etching and **Ni plating** from one solution	**ethanol-free**, low HF concentration, plates Ni in nm-pores, excellent adhesion

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Etching Solutions

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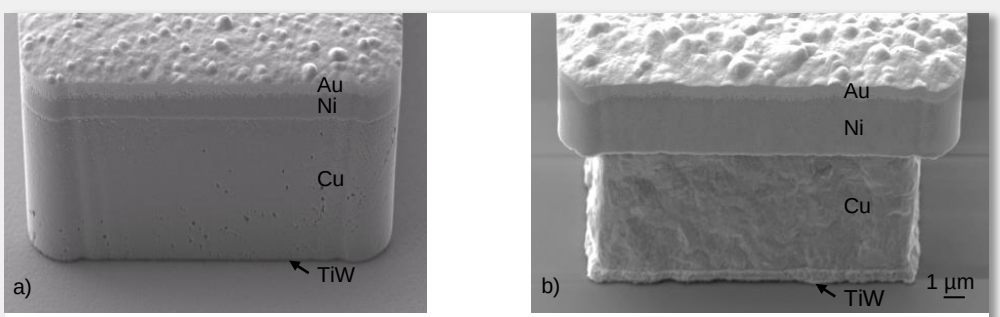
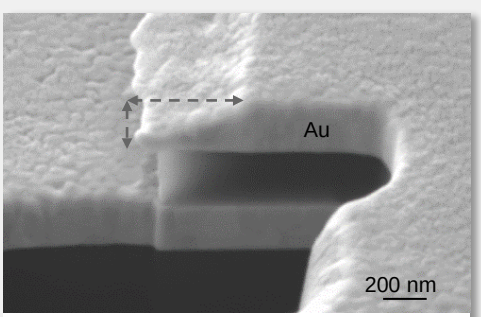
NBT has designed etching chemicals for the removal or patterning of metals, sacrificial layers or seed layers for electroplating. The difference in requirements is whether the seed needs to be **removed after plating** with selectivity to all other materials and least dimension loss, or if the seed needs to be **patterned before plating**, which requires compatibility with masking resists.

Etchant	Application	Features
Au etch 200	Seed patterning / removal	Non-toxic, **cyanide-free, very small undercut**, resist compatible, selectivity to many metals and materials like Ni, Cr, Ti, Al, Ta, Pt; (Cu is etched); 50°C
Cr etch 200	Adhesion layer removal	Alkaline solution, RT, good selectivity to many metals like Au, Pt, Ta, Ti, Ni, Cu; (Ag is etched)
Cr etch 210	Adhesion layer patterning (resist mask)	Alkaline solution, **compatible with resist for patterning**, 40°C, good selectivity to many metals like (like Cr etch 200)
TiW etch 100	Barrier layer removal	**Compatible with resist**, low undercut, contains fluoride, RT, selectivity to many metals and materials like Au, Ni, Cr, Sn; (Al and Cu with limitation)
TiW etch 200	Barrier layer patterning (resist mask)	**Compatible with resist**, low undercut, contains fluoride, RT, selectivity to many metals and materials like Au, Cr, Ni ; (Cu is etched)
Cu etch 100	**Sacrificial layer removal**	Alkaline etchant, compatible with resist for patterning or etching **thick Cu layers, high undercut**, RT, selective to Ni, Au, Ag, Al, Sn, Ti, Ta, Cr, Si, Si2N4, SiO2
Cu etch 150	Seed patterning / removal	Alkaline etchant, compatible with resist (e.g. **Cu seed layers**) selective to Ni, Au, Ag, Al, Sn, Ti, Ta, Cr, Si, Si2N4, SiO2
Cu etch 200 UBM	Seed patterning (resist mask)	**Patterning of thin Cu layers, low undercut**, compatible with resist, RT, selective to Au, Ni, Cr, Ti, Ta, Sn, Al, Pt)
AX 100	**Activator** for plating of **nickel on nickel**	Acidic pre-dip solution, 40°C application, improves significantly adhesion, where nickel is plated on nickel



Plated Cu/Ni/Au on TiW/Cu seed
a) Etched Cu seed, no dimension loss of plated Cu
b) Etched TiW seed adhesion, no undercut of TiW, low dimension loss of Cu (~1 µm)



Edge of Au layer after Au etch 200:
Very low underetch within the dimension of layer thickness (© IMSAS)

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