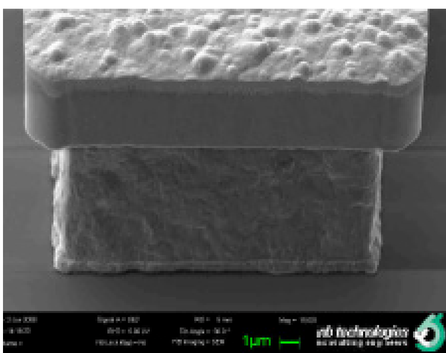
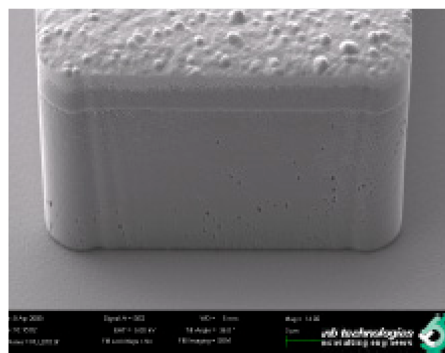
Etching solutions

NBT has designed etching chemicals for the removal or patterning of metals, sacrificial layers or seed layers for electroplating. The requirements on the solutions depend on the plating sequence. The difference 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.

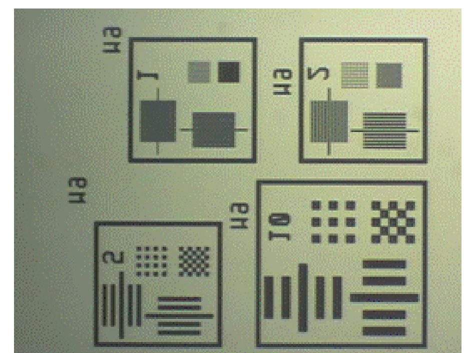
Etchant	Application	Features
Au etch 100	Seed patterning/removal	**Cyanide-based,** very small undercut, selectivity to many metals and materials, resist compatible
Au etch 200	Seed patterning/removal	Non-toxic, **cyanide-free**, very small undercut, selectivity to many metals and materials, resist compatible
Au etch 300	Seed patterning/removal	Non-toxic **iodine-based**, easy application, significant undercut, limited selectivity to plated metals, resist compatible
Cr etch 100	Adhesion layer removal (after plating)	Basic solution, good selectivity to many materials, **not compatible with resist**
Cr etch 200	Adhesion layer patterning (resist mask)	Basic solution, good selectivity to many metals, **compatible with resist for patterning**
TiW etch 200	Barrier layer patterning (resist mask)	low undercut, selectivity to many metals and materials, **compatible with resist**
TiW etch 500	Barrier layer removal	H^2O^2 based, medium undercut, semiconductor grade, **not compatible with resist**
Cu etch 100	Seed patterning/removal Sacrifical layer removal	Alkaline etchant, compatible with resist for patterning or etching **thick Cu layers,** selective to Ni, Au, Sn, Ti, Cr, Si, Si^2N^4, SiO^2, **high undercut**
Cu etch 300	Seed patterning (resist mask)	Compatible with resist, selective to Au, Ni, Cr, Ti, etching of TiW, **patterning of thin layers, low undercut**
Cu etch 500	Seed removal	Removal of thin layers, very low dimension loss on plated copper sidewalls, semiconductor grade, **not compatible with resist**



Etching TiW after plating
Plated Cu/Ni/Au on TiW/Cu seed
No undercut of TiW
Least dimension loss of Cu (~1µm)



Etching Cu seed after plating
Plated Cu/Ni/Au on TiW/Cu seed
No dimension loss of plated Cu



Patterning before plating
Cr/Au seed from the backside of glass wafer
Least undercut, 1µm feature resolved

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