Plating for Silicon Solar Cells
- Overview -

nb technologies
consulting engineers

Electroplated metallisation for silicon solar cells enables **efficiency increase and CoO reduction**, but involves multiple technical disciplines. We offer a manifold portfolio of techniques and services to respond to your needs in the field of **plating technologies for solar cell metallisation**.

Ask for your sampling!

Services

- Plating process, chemistry & tooling
- Etching process, chemistry & tooling
- Fine-line screen printing
  (Ag and etch paste for ARC patterning)
- Passivation layer patterning by wet etch

- Production line optimisation
  (CoO, efficiency)
- Reliability studies
- Layer characterisation
  (cross section, FIB, TEM, Auger, XRF)
- **Sampling**

Highlights

NEW

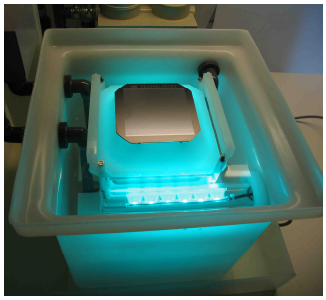
In NBT's **suncup**® smart plating tool, the wafer process is single-sided, the backside keeps dry during wet process. All wet processes can be performed without restrictions from the backside.

Screen printed photo resists can be applied as etch resist for wet etch of nitride, plating mould and blind plating protection, while lithography is not needed.

Resist moulds are suitable for plating on Ag paste as well as for direct plating on silicon.

NBT's direct plating on silicon enables contacting of high-ohmic emitters or even without selective emitter. The **silicide formation** is **limited to a shallow porous silicon** (patent pending), which avoids short cutting of shallow emitters. There is no electroless plating involved and silicide is formed after the completion of the full stack.

Process flow variations
(x1, x2, x3 = options)
(***x1*** = preferred)



	Plating on silver paste	Plating on silver paste with PR mould	Direct plating on Silicon	Direct plating on Silicon	Direct plating on Silicon with PR mould	Direct plating on Silicon with PR mould	Plating on unpatterned seed with mould	Plating on patterned seed with mould	Plating on patterned seed without mould
Silver paste	X	X							
PR for nitride opening				X	X	X			
screen printed PR				***x1***	***x1***	***x1***			
lithography				x2	x2	x2			
Nitride opening			X	X	X	X	X	X	X
screen printed etching paste			x1				x1	x1	x1
wet etch				***x1***	***x1***	***x1***			
dry etch				x2	x2	x2			
PR removal				X					
Seed (e.g. TiW/Cu)							X	X	X
PR pattern								x	x
Seed patterning								X	X
PR removal								x	x
Porous silicon					X	X			
on selective emitter					*x2*	*x2*			
high ohmic emitter					***x1***	***x1***			
Plating mould		X			X	X	X	X	
screen printed PR mould		***x1***					***x1***	***x1***	
lithography		x2					x2	x2	
Plating	X	X	X	X	X	X	X	X	X
electroless Ag	x1								
electroplating Ag	x2	x1	x1	x1	x1				
Ni/Cu/Sn	x3	x2							
Ni-silicide/Ni/Cu/Sn or Ag			x2	x2					
Ni/Cu/Sn or Ag						***x1***			
Ag/Ni/Cu/Sn or Ag			x3	x3	x2				
Cu/Sn							x	x	x
PR removal		X			X	X	X	X	
Ni-silicide formation						X			
Seed removal after plating							X		

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