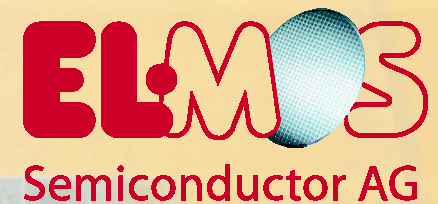


ElmoClean One Year Later

Peter Binkhoff
ELMOS Semiconductor AG



The future of probe needle cleaning...

... is
non
abrasive!

Fig. 1

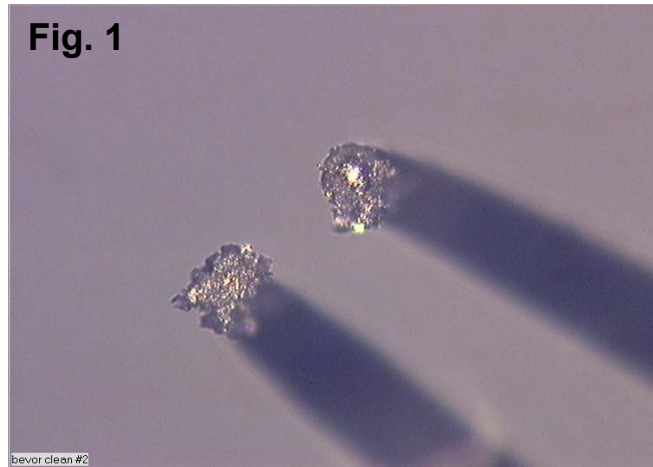


Fig. 2

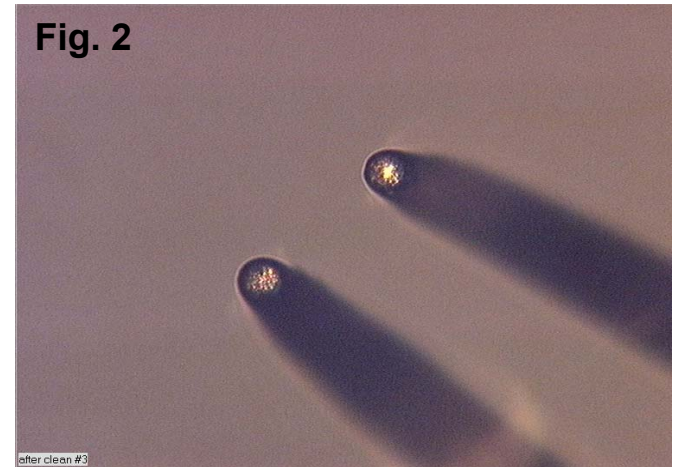
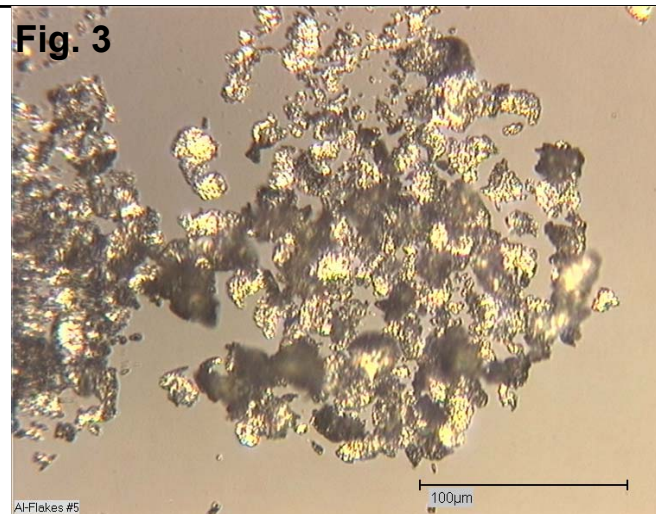


Fig. 3

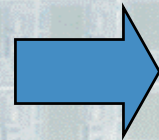


„How does the sticky pad work ?“

Electrical
Dipoles on
ElmoClean
boundary
Surface

Probe Needle
Touchdown
On ElmoClean

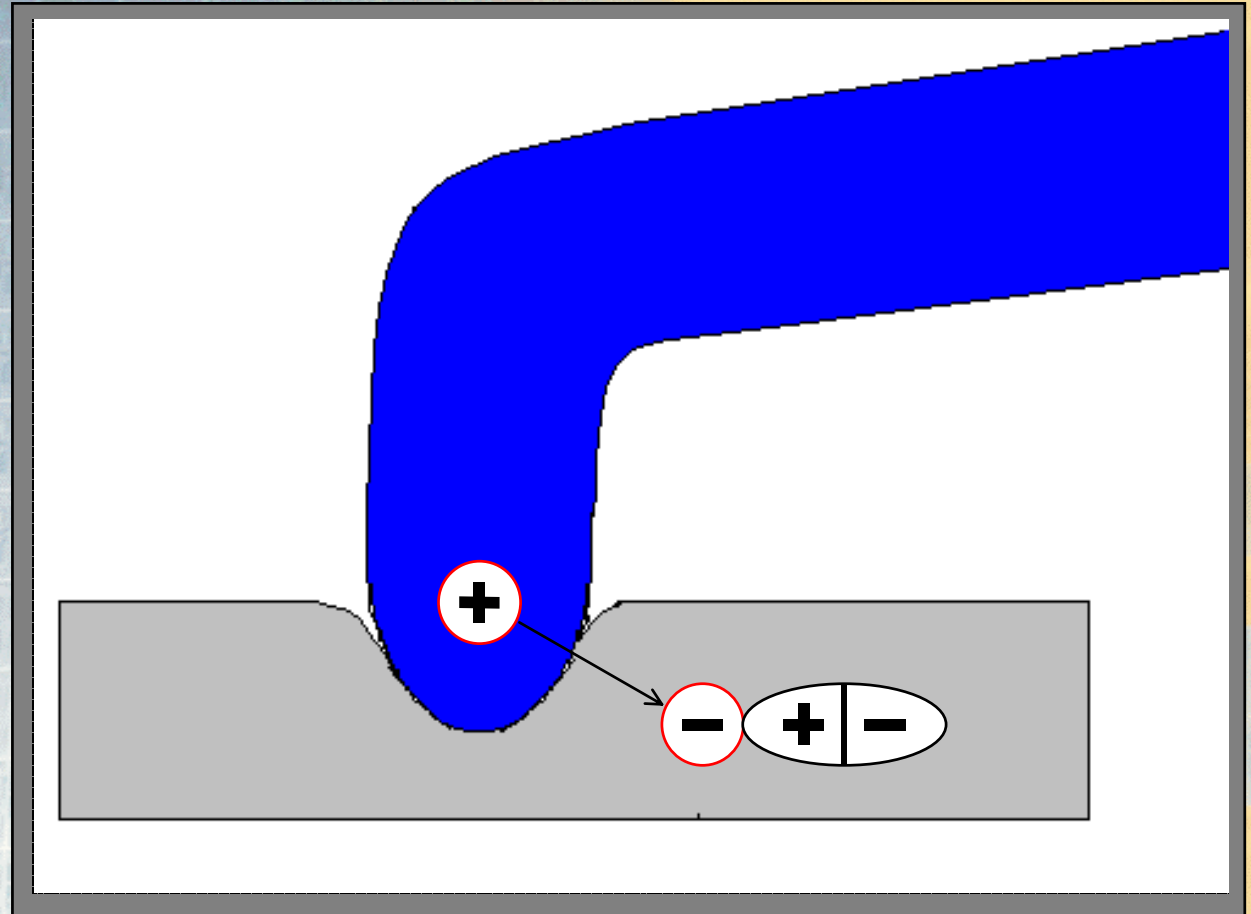
Bond Pad Debris
On The ElmoClean
Surface



- Electrons from the debris are moving into boundary surface
- The van der Waals interaction keeps the bond pad debris on the ElmoClean surface

To keep it simple ...

The electrical properties of ElmoClean attract and hold the bond pad debris



Wafer Sort Cost Savings

Since the introduction of ElmoClean at ELMOS: 20% more throughput 3% higher wafer yield

- Higher throughput, less reprobes
- Higher yields due to more reliable probe cards
- Reducing probe card expense due to longer lasting probe cards



Happy Operators and Managers!

The Secrets of Successful Cleaning

It is not a big deal, is it?

- Use radius probe tips with a smooth surface
- Find **your** cleaning parameters by playing with the cleaning frequency
- Clean the ElmoClean once the needle touches the same spot again
- Never penetrate the ElmoClean - stay on its surface
- The vision to introduce an innovative cleaning solution in the wafer sort floor

Success Stories With Probing on AlSi / AlSiCu

Both have success with using radius tips for probing on AlSi / AlSiCu!

- **Parametric Testing:**
- Cantilever probe cards
- Tungsten Radius Tips 1-1.5 mil
- 1 automatic cleaning cycle after every 250 touchdowns x mil deep
- **Results:**
- Lower contact resistance
- Considerable cost reduction due to less probe card maintenance
- **Functional Testing:**
- Cantilever probe cards
- Tungsten Radius Tips 2 mil
- 1 automatic cleaning cycle after every 100 touchdowns 2 mil deep
- **Results:**
- Before ElmoClean our yields dropped dramatically after 4,000 touchdowns
- “Now we have been able to run without any significant yield loss”

Success Stories With Probing on Au

Flat tips on
gold pads!

- **Functional Testing:**
- Cantilever probe cards
- Palliney, CuBe Flat Tips
1-1.5 mil
- 3 automatic cleaning cycle
after every 500
touchdowns
- **Results:**
- Before ElmoClean,
“..reprobe wafers due to
bad contacts”
- “..this problem has largely
gone away”
- “..repair due to dirty probe
needles has reduced”
- **Functional Testing:**
- Cantilever probe cards
- CuBe, Tungsten-Rhe.
Flat Tips 2 mil
- 1 automatic cleaning
cycle after every 100
touchdowns 3 mil deep
- **Results:**
- Before ElmoClean
450,000 touchdowns
with one probe card
- Now over 3,600,000
touchdowns “it seems
the probe card last
forever”

Acknowledgements to :

ElmoClean™
in the wafer
sort floor

- Jeanne C. Desmond
- Andrew Choo
- Dr. Hartmut Rombach
- Mark Vendange

For Having The “Vison”