sPHENIX INTT

Cheng-Wei Shih, Kai-Yu Cheng, Chia-Ming Kuo (NCU)

Rong-Shyang Lu, Hsin-Yeh Wu, jenny Huang, Ou-Wei cheng (NTU)

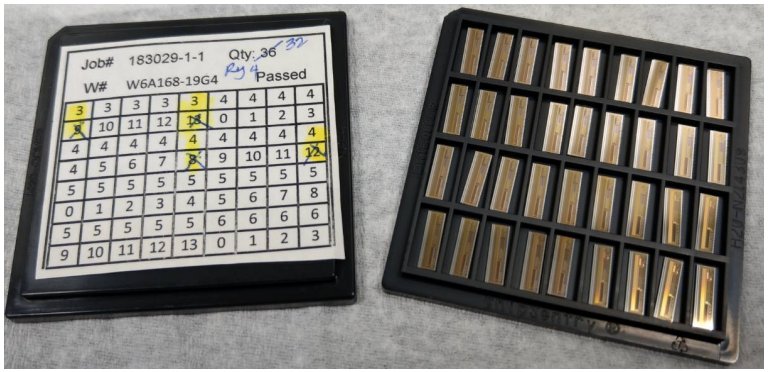
Takahito Todoroki, Itaru Nakagawa (RBRC)

Takashi Hachiya, Ayaka Suzuki, Miu Morita, Mika Shibata (NWU)

Rachid Nouicer (BNL)

The arrival of chips

2020/05/11
Good : 1534 pcs
Bad : 135 pcs
All the chips are in NTU



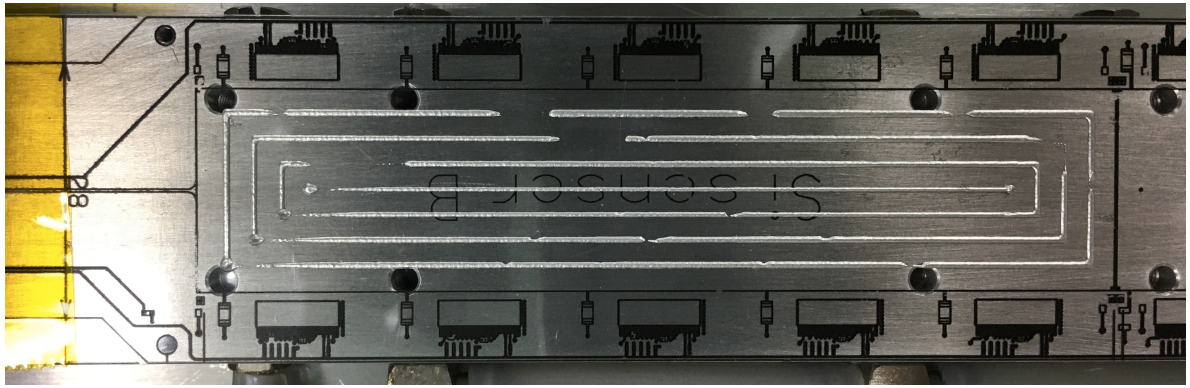


Previous sensor assembly testing

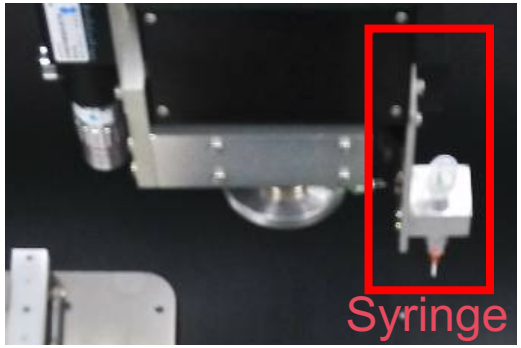
*2020/5/5

Test area : type B (acrylic sensor (1.5mm) and HDI film were used)
Test Chips : 3 (chips from first test were used)

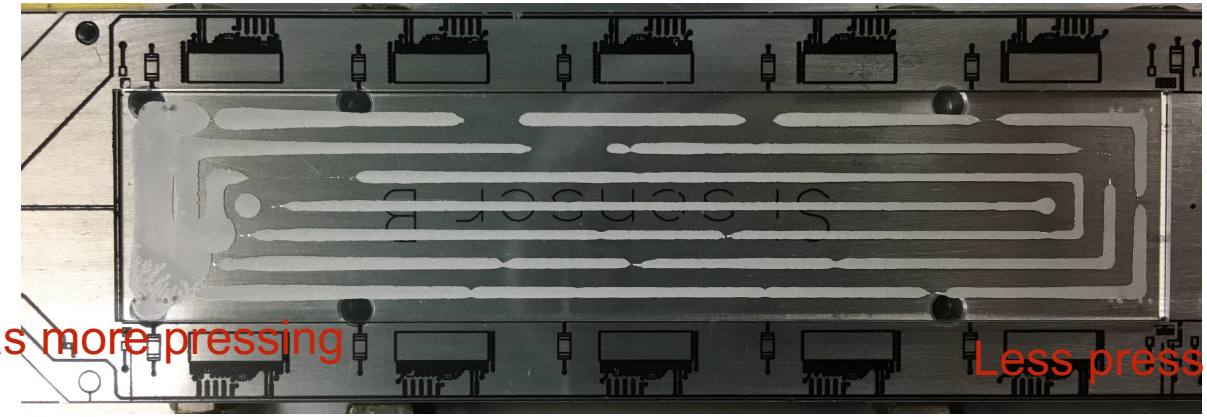
The glue pattern of type B area



Gantry head



Acrylic dummy sensor assembly

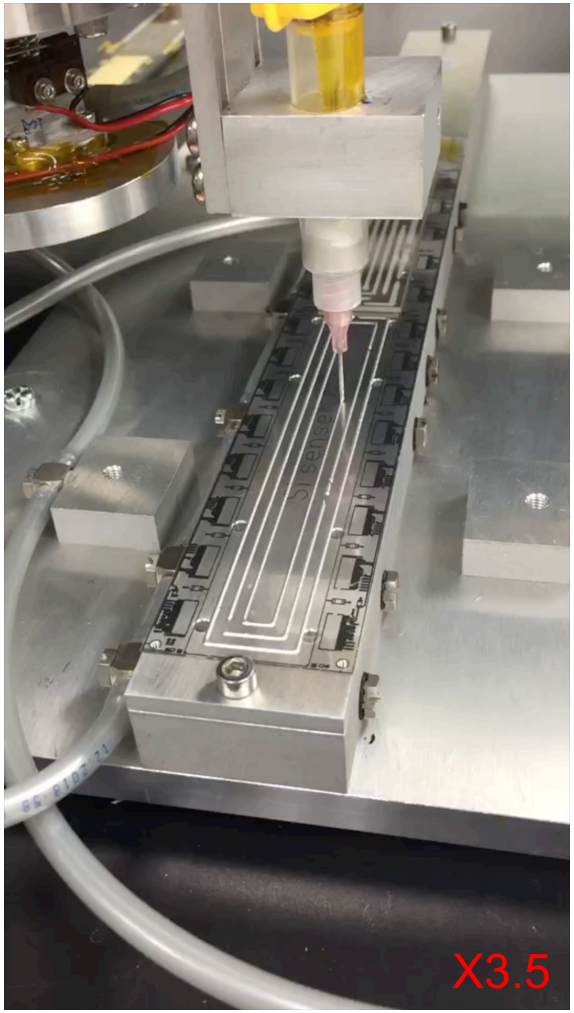


Has more pressing

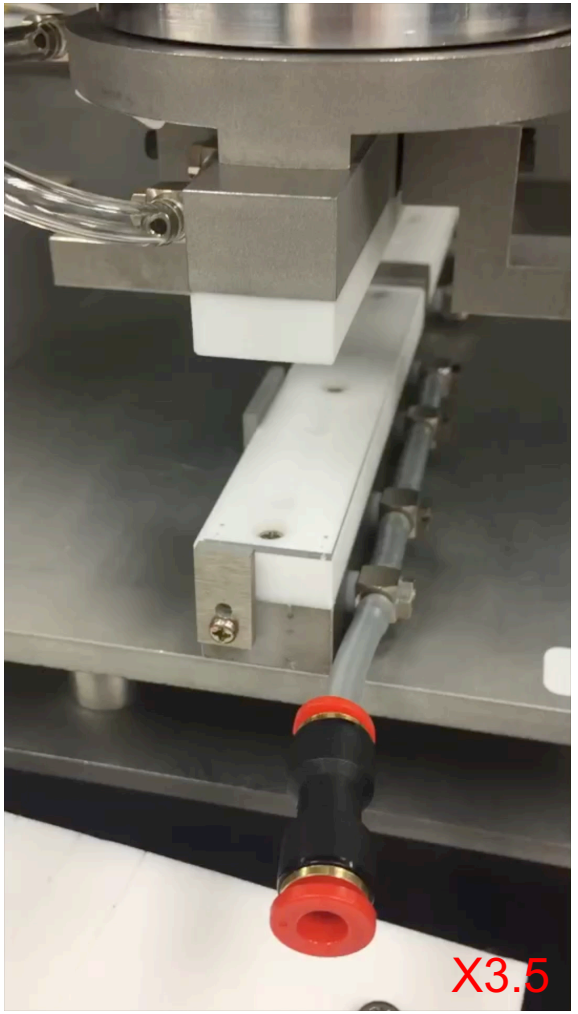
Less pressing

Video : deposit glue, sensor pick and place

Glue deposit



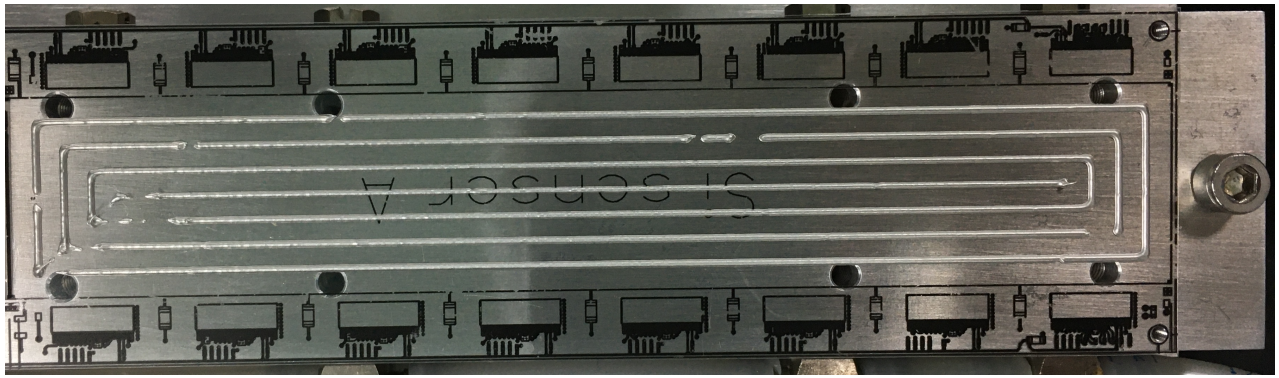
Sensor pick and place



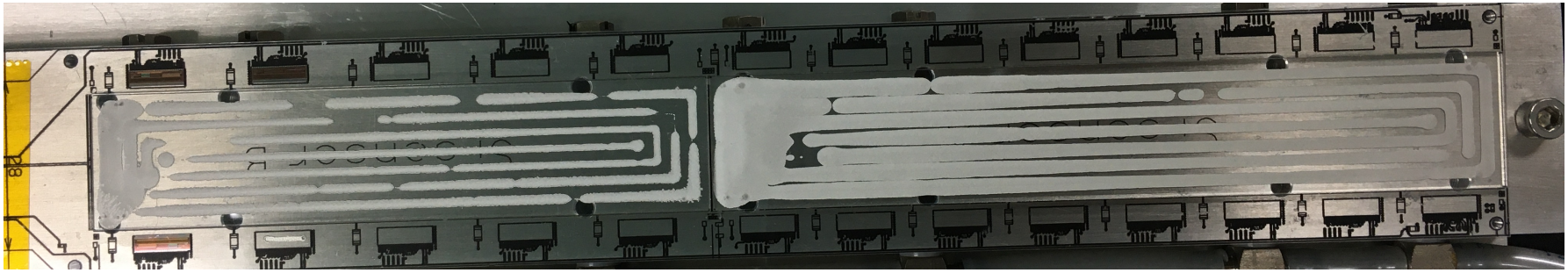
Type A sensor assembly testing

Test area : type A (acrylic sensor (1.5mm) and HDI film were used)

The glue pattern of type A area



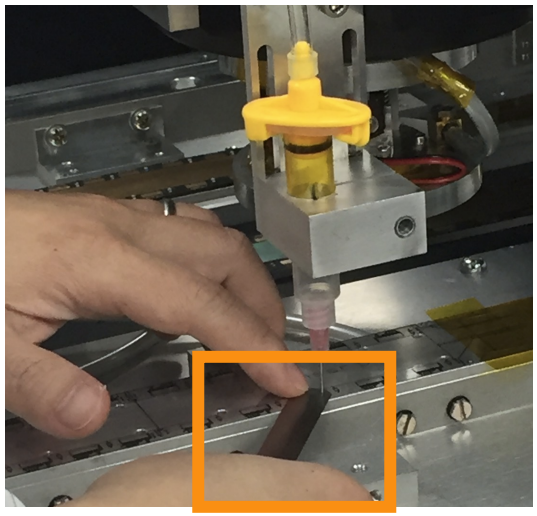
After the assembly of acrylic sensor



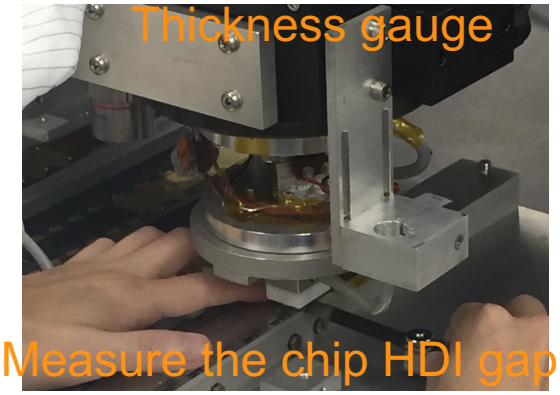
The chip assembly test

There is no leakage

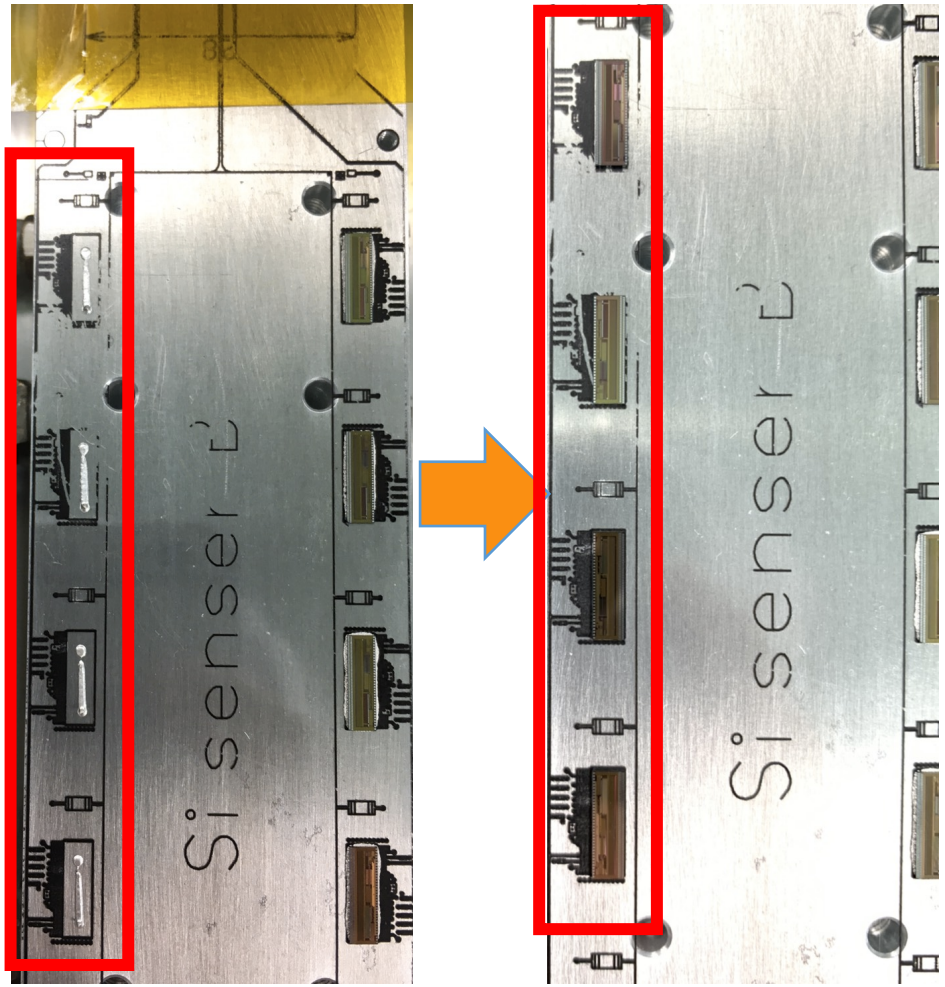
Use the thickness gauge, the gap : 140 um
Waiting cure time : 20 min



Thickness gauge

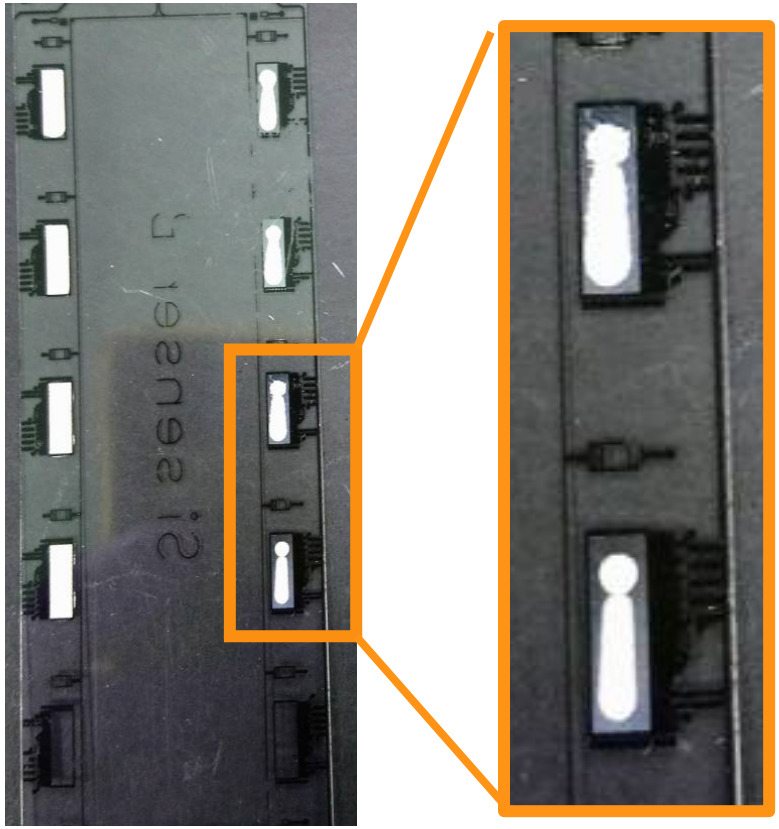


Measure the chip HDI gap



Properties measurements of chip + glue

The back side of the HDI film



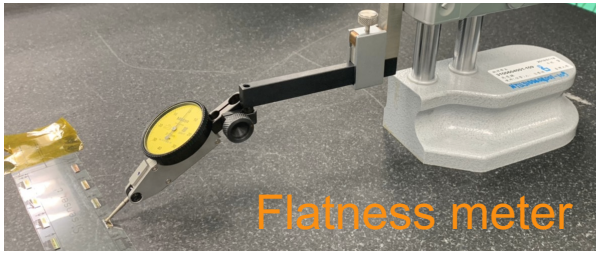
No glue spread

Measured by OGP

Chip number	Rotate angle
U14	0.0823^0
U15	0.0313^0
U16	0.0094^0
U17	0.025^0

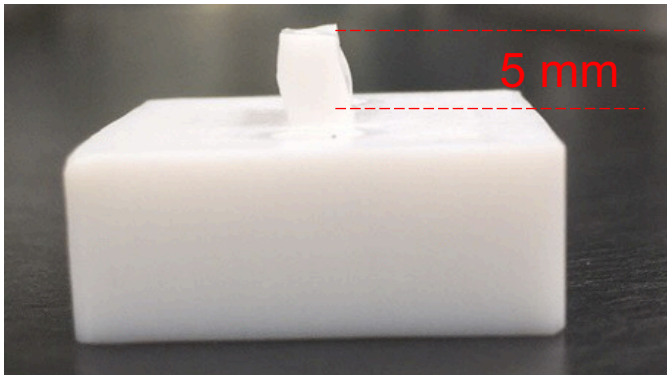
Measured by flatness meter

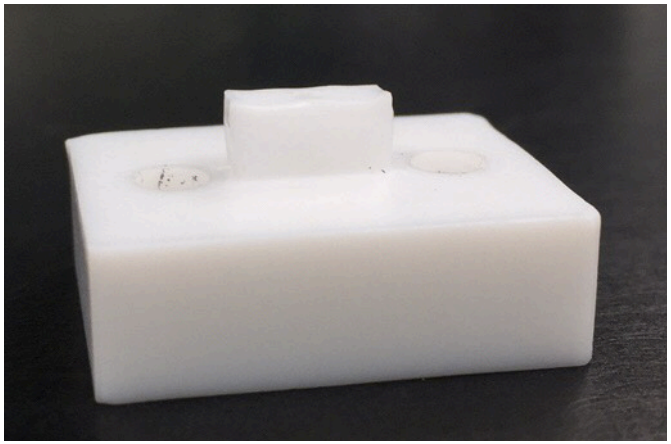
Chip number	Glue layer
U14	30 μm
U15	50 μm
U16	40 μm
U17	55 μm

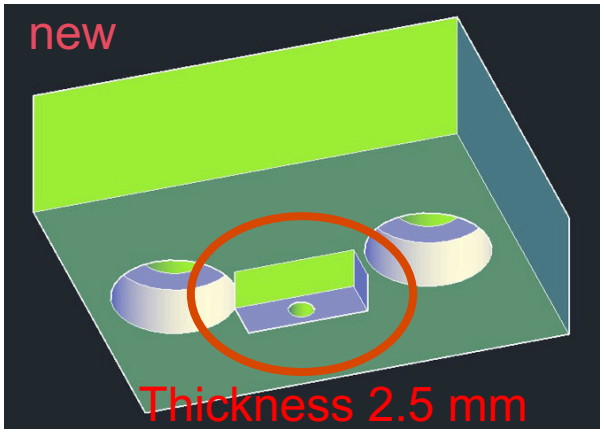


The problem of the chip pick up head - teflon

The durability of Teflon is not good….

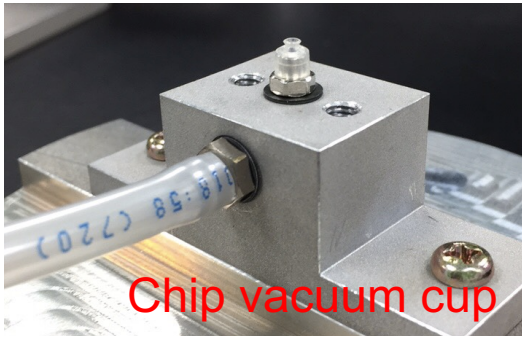






Decrease the thickness of the attached pad

Current plan : use the vacuum cup, 4 new teflon heads are in production.



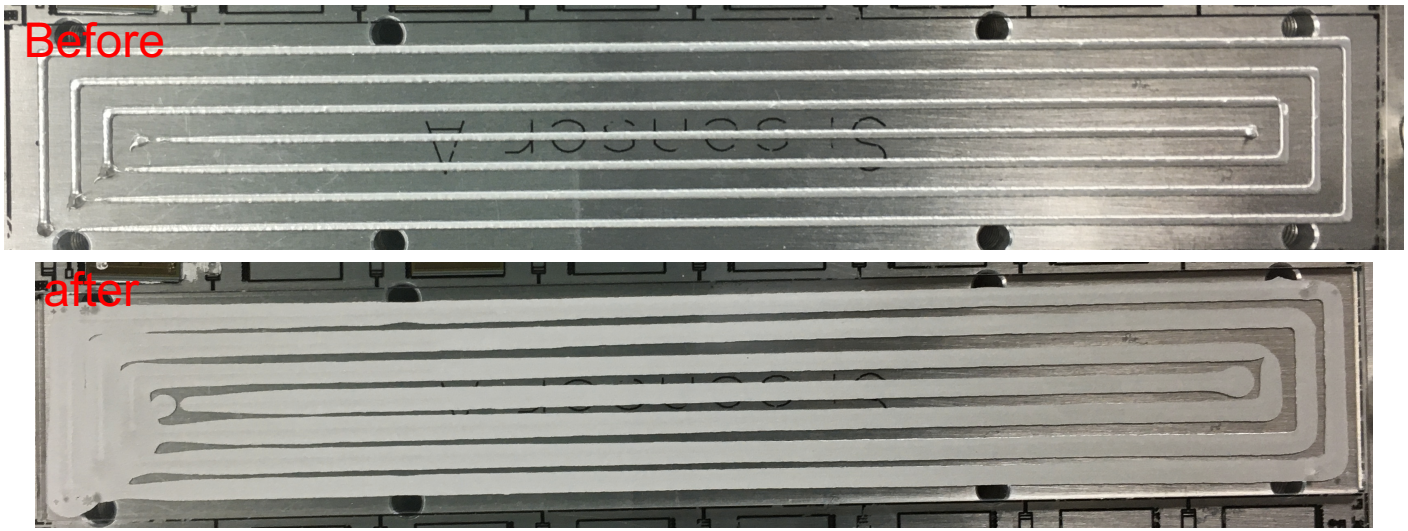
Fourth assembly test

Test area : type A (acrylic sensor (1.5mm) and HDI film were used)
Test Chips : 4 (new chips)

Sensor assembly :
Needle height : 190 μm
Sensor – HDI gap : 60 μm
Chips assembly :
Needle height : 140 μm
Chips - HDI gap : 70 um

Sensor A position	Height (mm)
Up point	1.55
midpoint	1.53
Down point	1.53

Thickness of acrylic sensor 1.40 ~ 1.49 mm

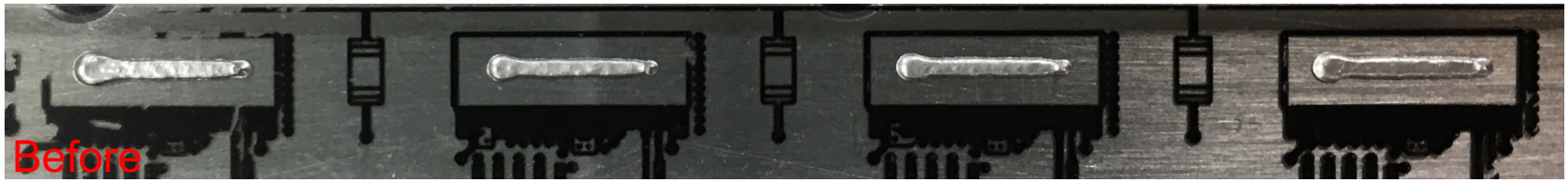


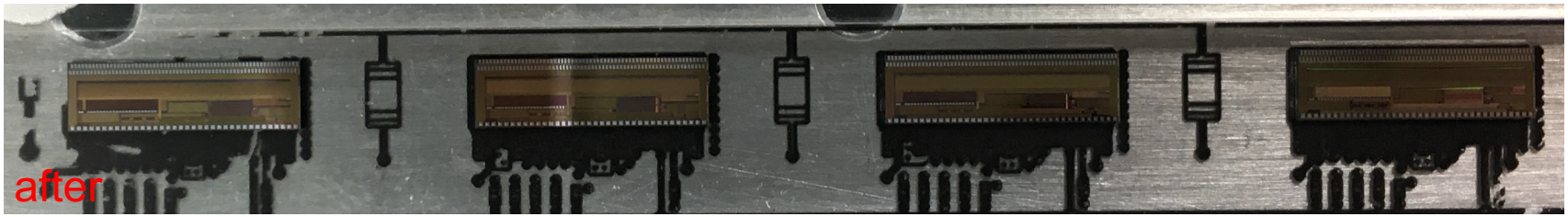
Fourth assembly test

Test area : type A (acrylic sensor (1.5mm) and HDI film were used)
Test Chips : 4 (new chips)

Sensor assembly :
Needle height : 190 μm
Sensor – HDI gap : 60 μm
Chips assembly :
Needle height : 140 μm
Chips - HDI gap : 60 um

Chip number	Glue layer
U19	35 μm
U20	25 μm
U21	25 μm
U22	35 μm

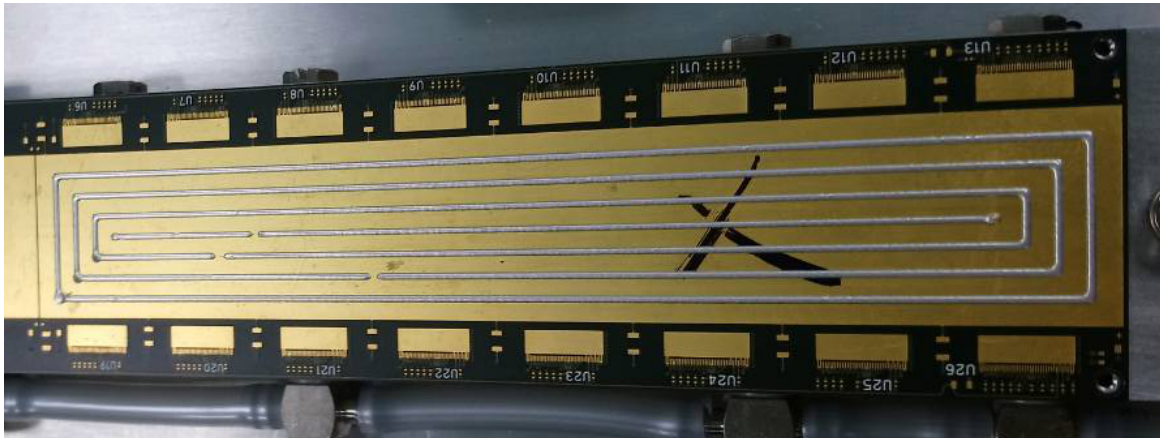




Assembly test with rejected HDI

Test area : type A (dummy sensor (320μm), rejected HDI were used)
Test Chips : 6 (new chips)

Sensor assembly :
Needle height : 190 μm
Sensor – HDI gap : 60 μm
Chips assembly :
Needle height : 140 μm
Chips - HDI gap : 60 um



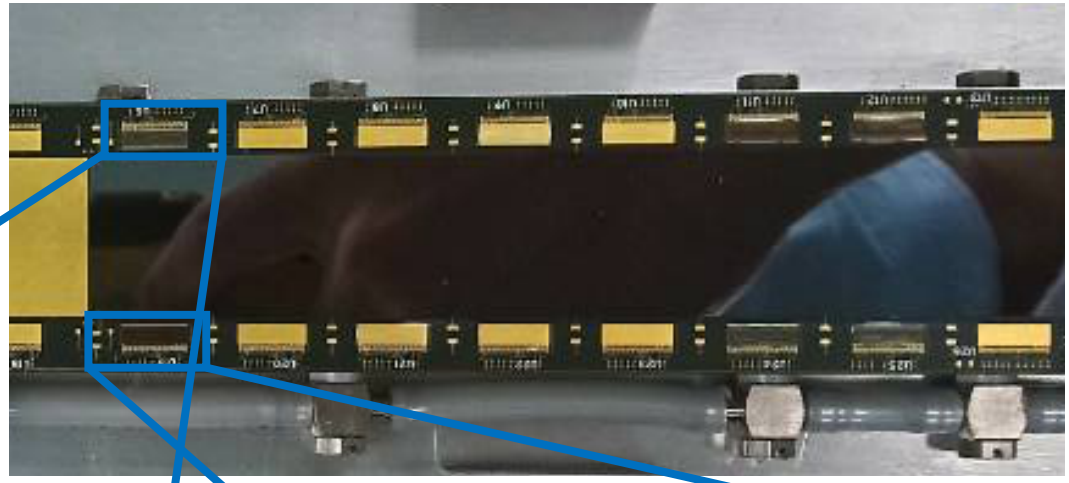


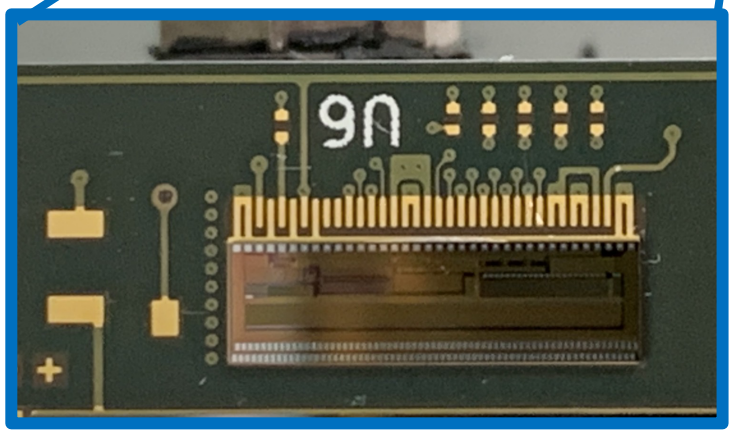
To do list : assemble dummy sensor type B, measure the placing error by OGP

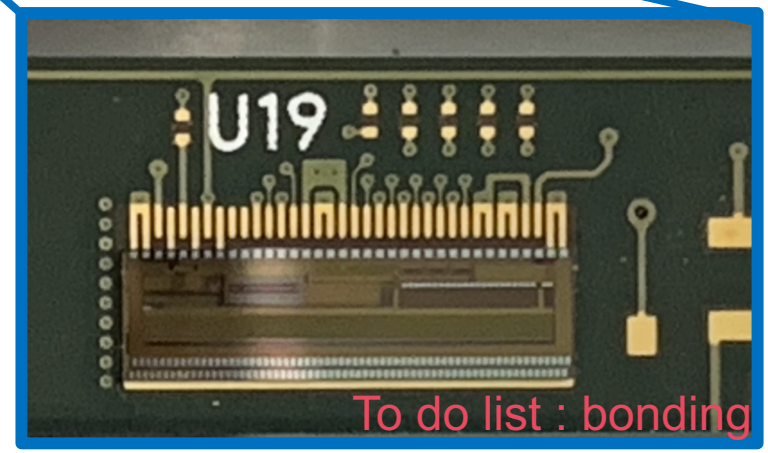
Assembly test with rejected HDI

Test area : type A (dummy sensor (320μm), rejected HDI were used)
Test Chips : 6 (new chips)

Sensor assembly :
Needle height : 190 μm
Sensor – HDI gap : 60 μm
Chips assembly :
Needle height : 140 μm
Chips - HDI gap : 60 μm







To do list

- ~~Test the glue applying parameters with the acrylic sensors.~~

  ~~Assemble real chips again after making sure the proper glue applying parameters.~~

- ~~Assemble the dummy sensor~~ and check the position error by using OGP

- Produce two real modules before 5/29

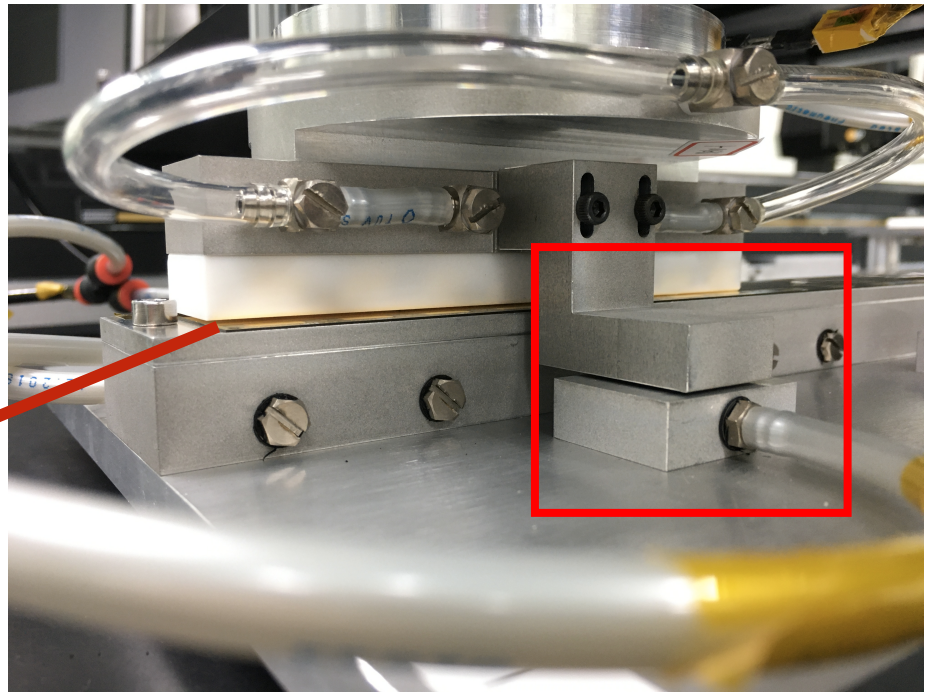
Back up

Maintain the sensor – HDI gap

Dummy sensor

Paper (60 micron)

HDI



Legs were used for alignment