

A photograph of two individuals in a cleanroom environment. One person is wearing a white full-body cleanroom suit with a hood and goggles, and the other is wearing a blue full-body cleanroom suit with a hood. They are both wearing gloves and are working together at a table. On the table, there is a piece of electronic equipment with a camera mounted on top, and various small components and tools are scattered around. The background shows a cleanroom setting with a metal frame and a rack of white lab coats.

Current Status of Mode Cleaner モードクリーナ現状報告

Naoko Ohishi, Takahiro Saito, et al.

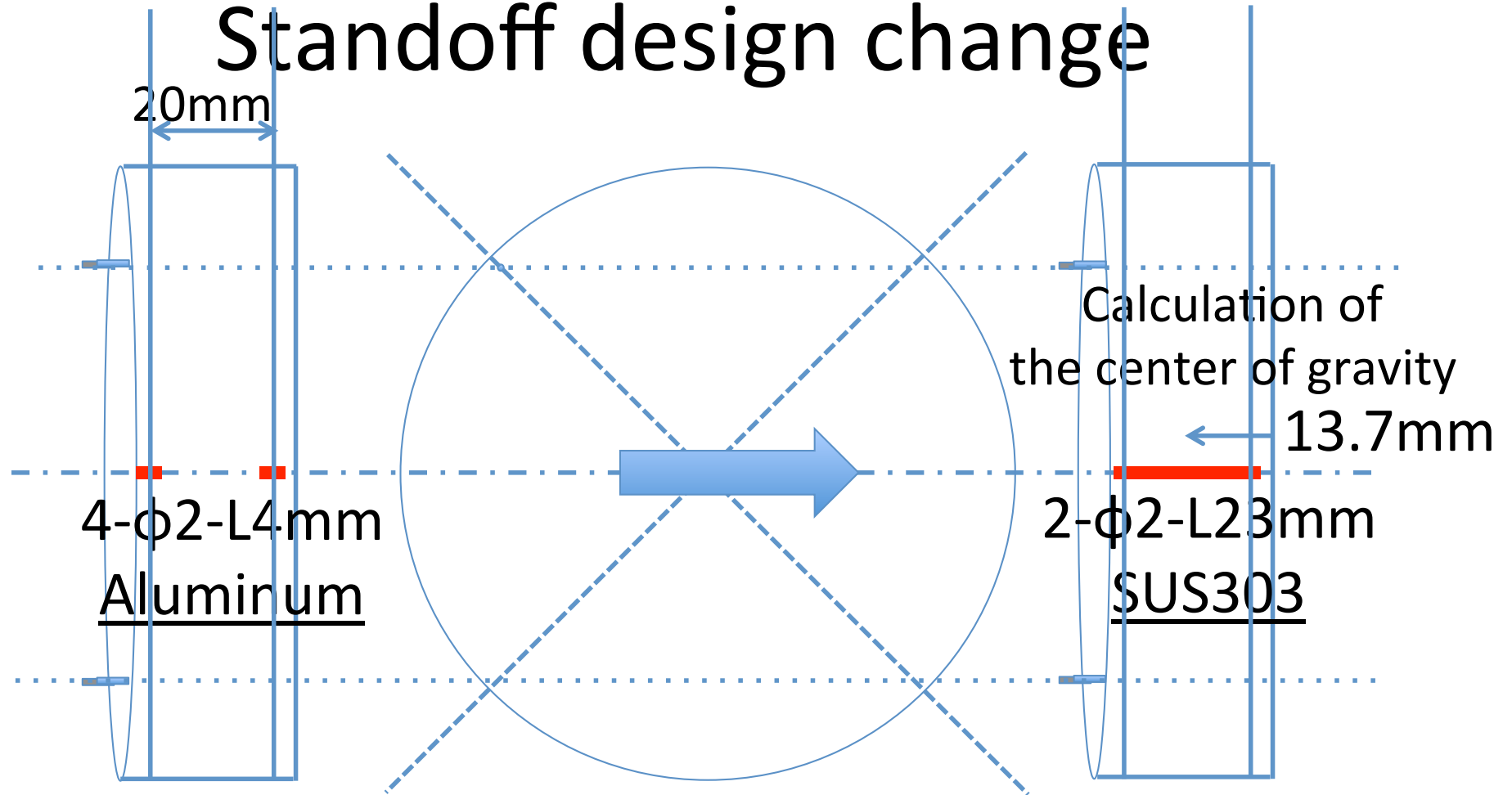
Contents

- Cleanness of MCE clean booth /
MCE クリーンブース清浄度
- Standoff (Wire breaker) / スタンドオフ
- Standoff and magnets fixture jig / 接着治具
- Summary / まとめ

1. MCE booth cleanliness

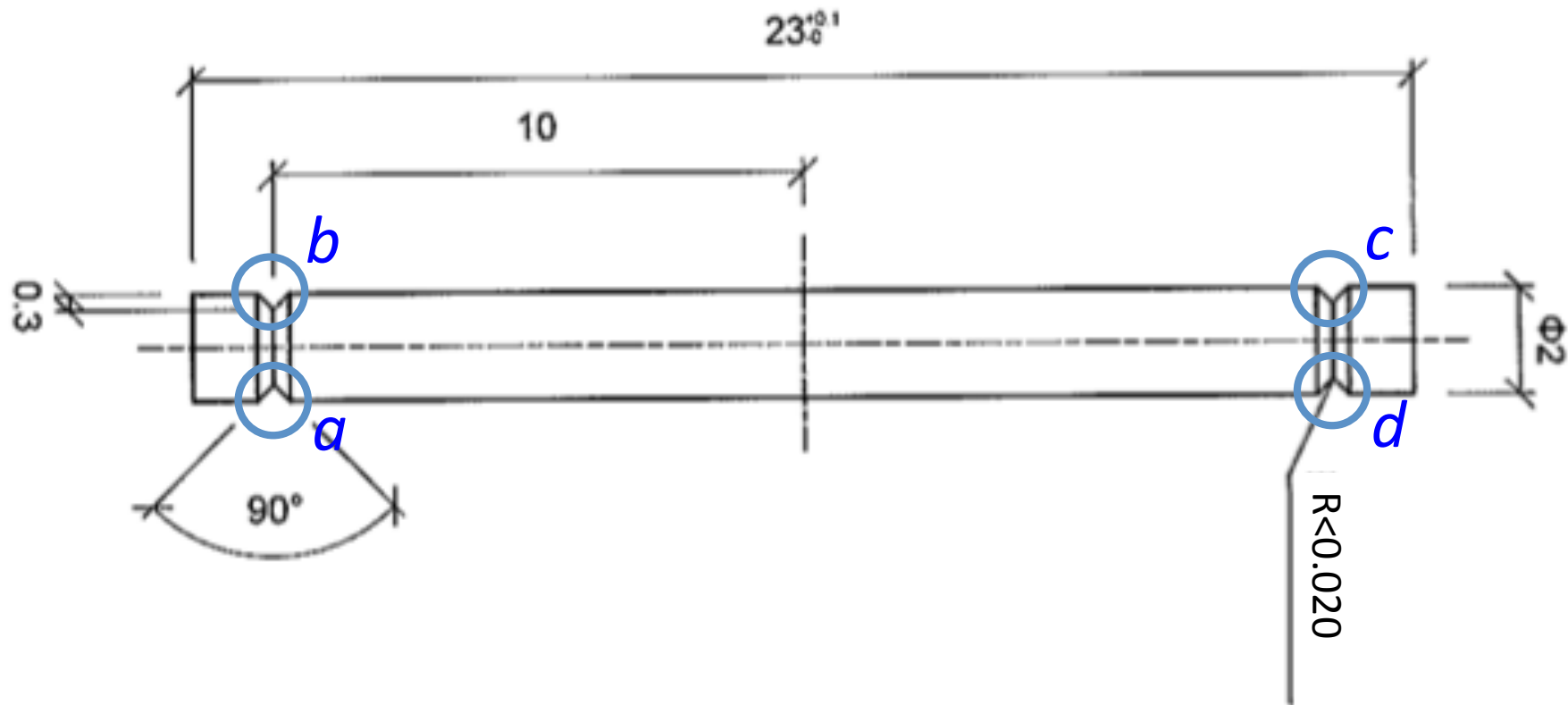
- Roof cover with blue sheet (21th Apr)
- Wash inside with high pressure water washers (water, pure water), wipe, brush floor (by VIS)
- class 4-5 (23th Apr)
- Floor cut (18-20th May)
- Wipe inside (22th May)
- Cleanness : ISO class 4 (25th May)
- Humidity: 76% (after 3hours **injection of dry air**)

Standoff design change



- Requirement
for the bottom radius of V-groove
- $r < 20\mu\text{m}$ to fix 50- μm (diameter) tungsten wire 4

Measurement of V-groove



Measured 4 points (6 pieces) with MM-40 NIKON
By T. Saito, K. Hirai, and T. Narita (Niigata Univ.)

Standoff $1a$

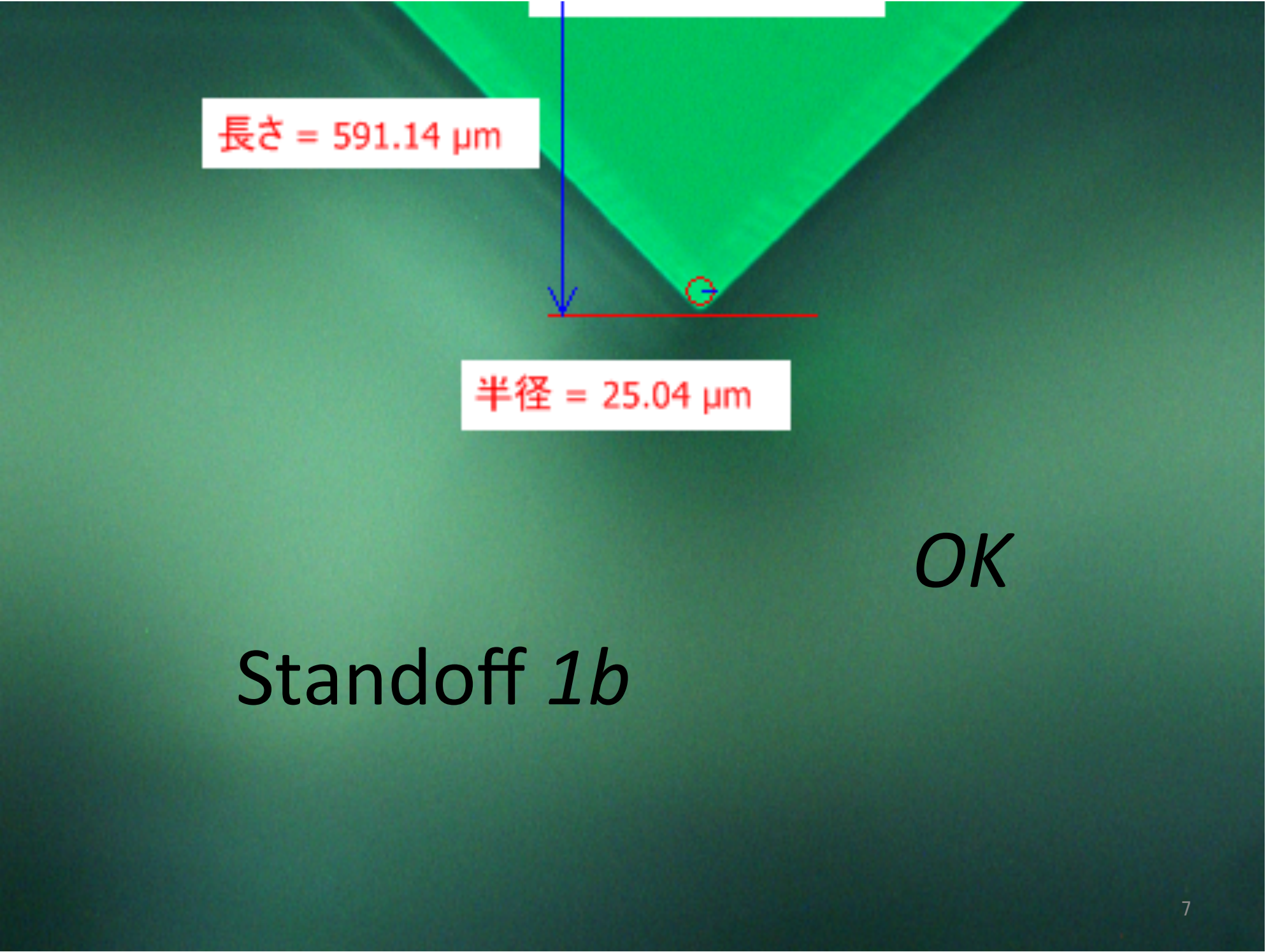
OK

長さ = 572.72 μm

半径 = 25.04 μm

Referene circle
(50um in diameter)

長さ = 1155.10 μm



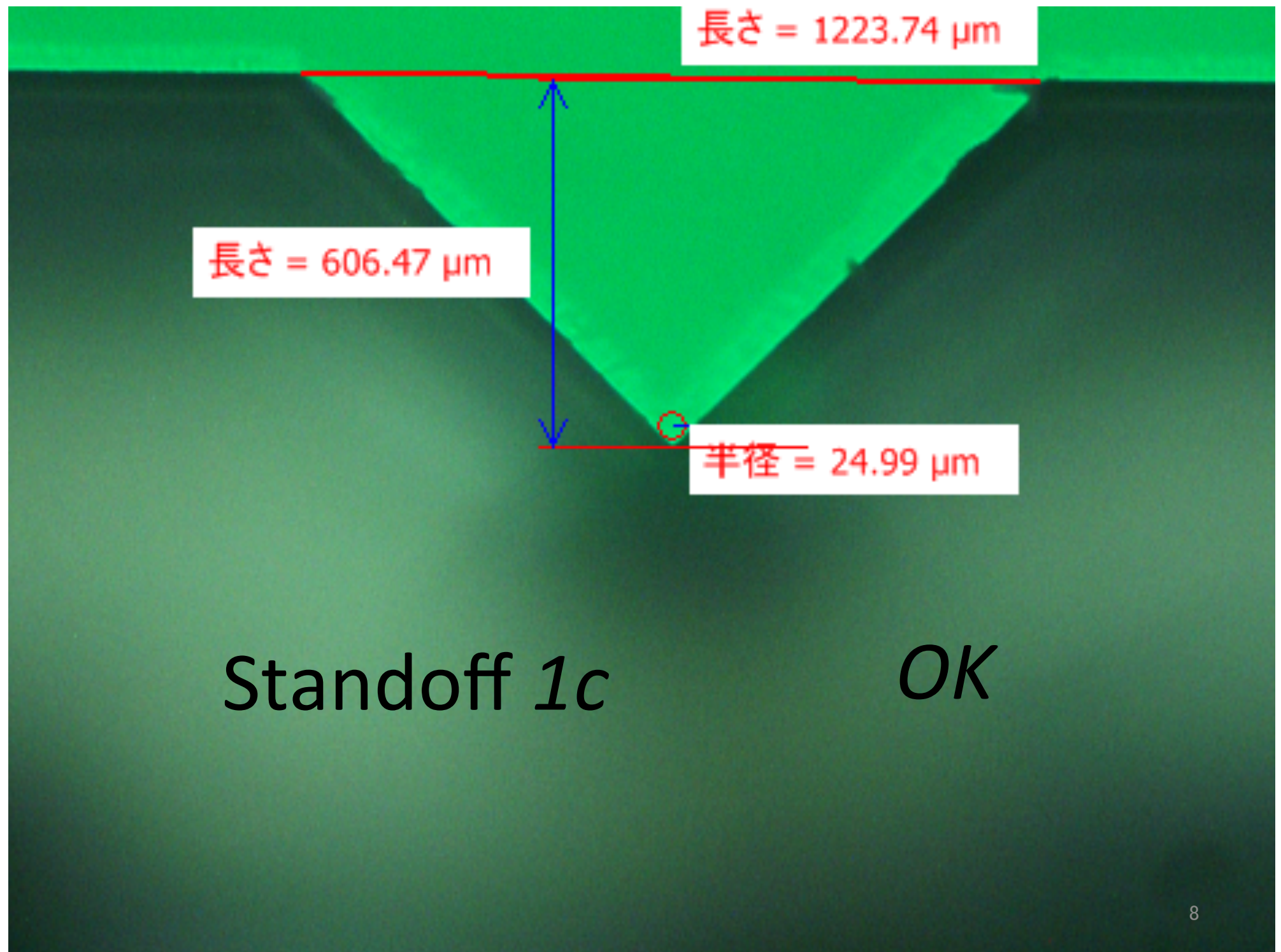
A micrograph of a V-groove structure on a substrate. The groove is filled with a bright green material. A blue vertical line with arrows at both ends indicates the depth of the groove. A red horizontal line at the base of the groove indicates its width. A red circle with a horizontal arrow pointing to the right is positioned at the center of the base of the groove. Two white rectangular boxes with red text provide the measured values for the depth and radius.

長さ = 591.14 μm

半径 = 25.04 μm

OK

Standoff *1b*



Standoff $1d$

OK

長さ = $598.55\ \mu\text{m}$

半径 = $25.06\ \mu\text{m}$

長さ = $1199.35\ \mu\text{m}$

Standoff $4c$

NG

長さ = $1306.80\ \mu\text{m}$

長さ = $637.91\ \mu\text{m}$

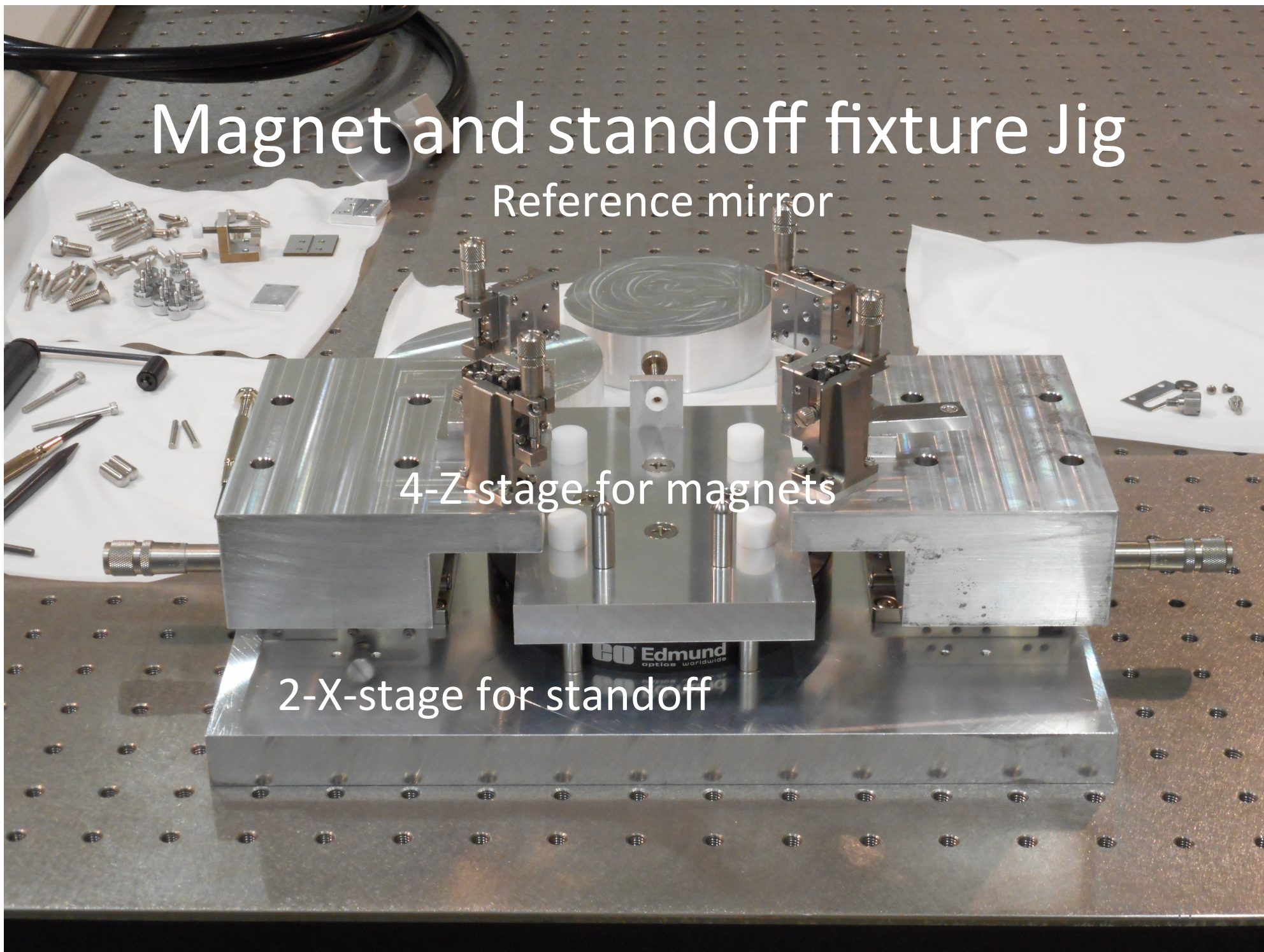
半径 = $25.04\ \mu\text{m}$

Magnet and standoff fixture Jig

Reference mirror

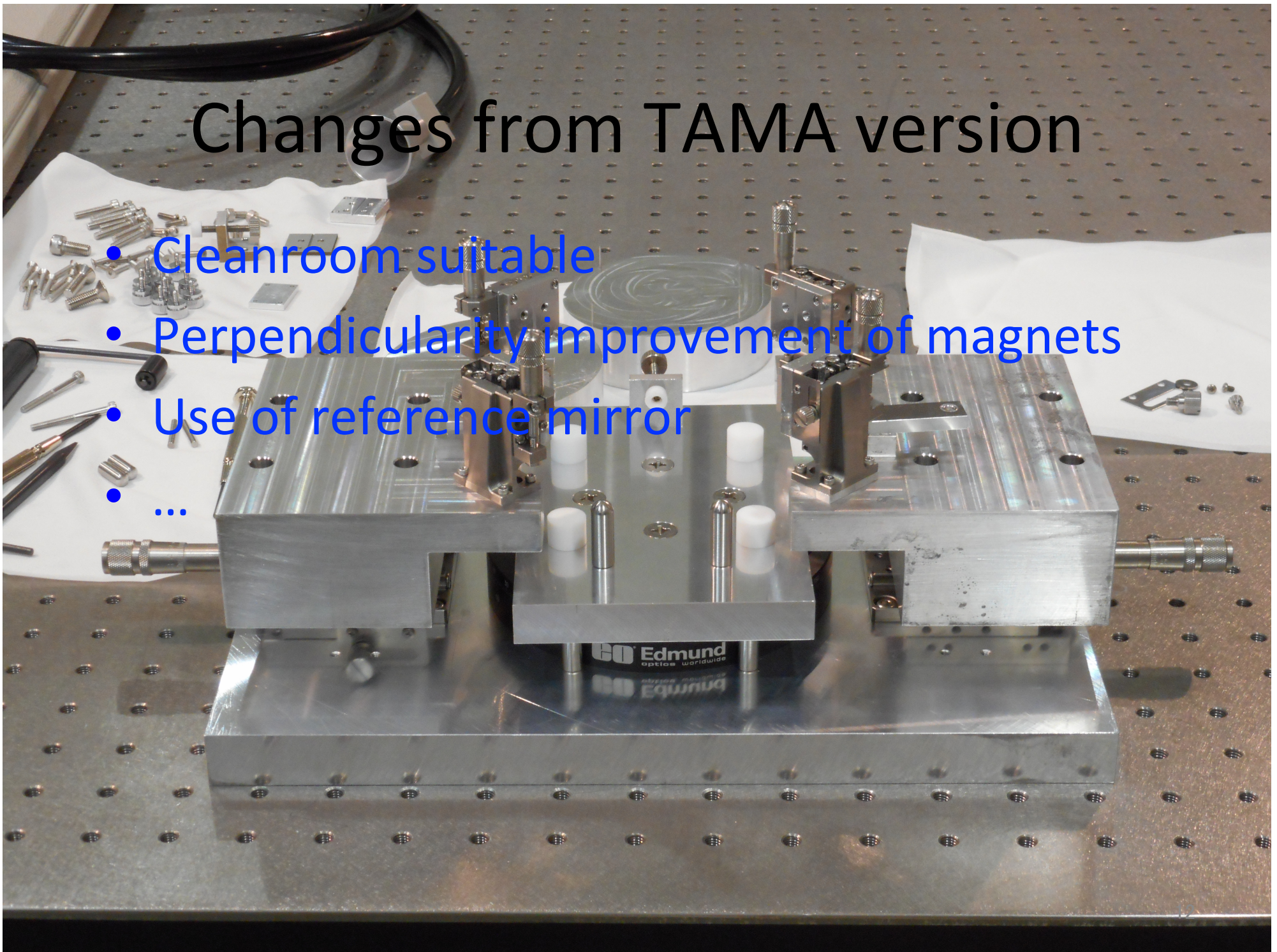
4-Z-stage for magnets

2-X-stage for standoff



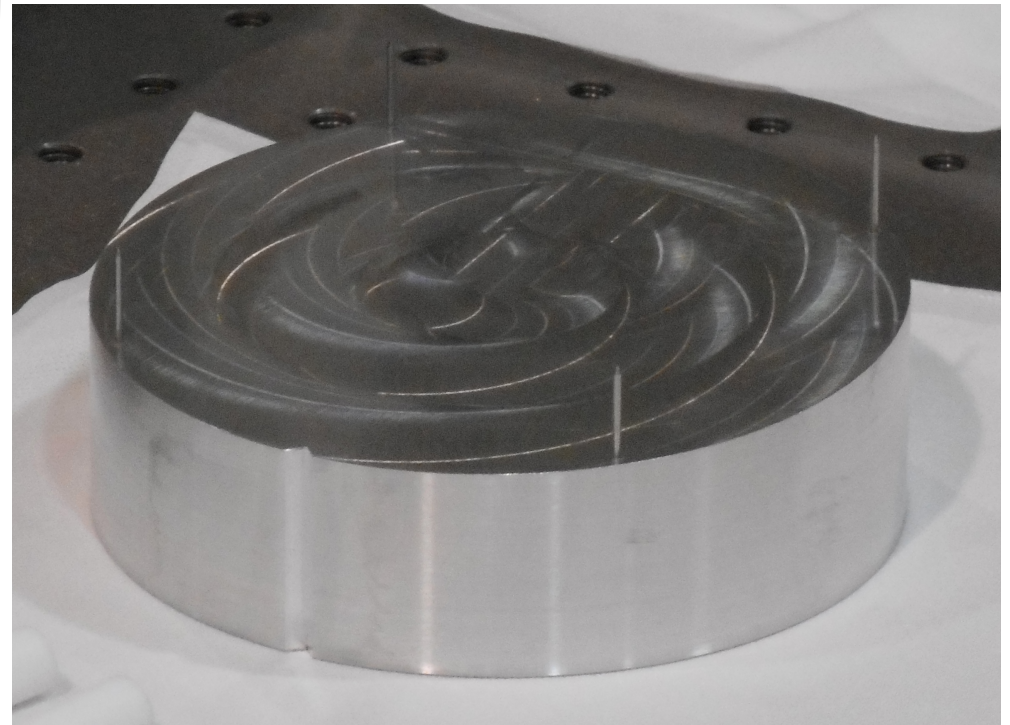
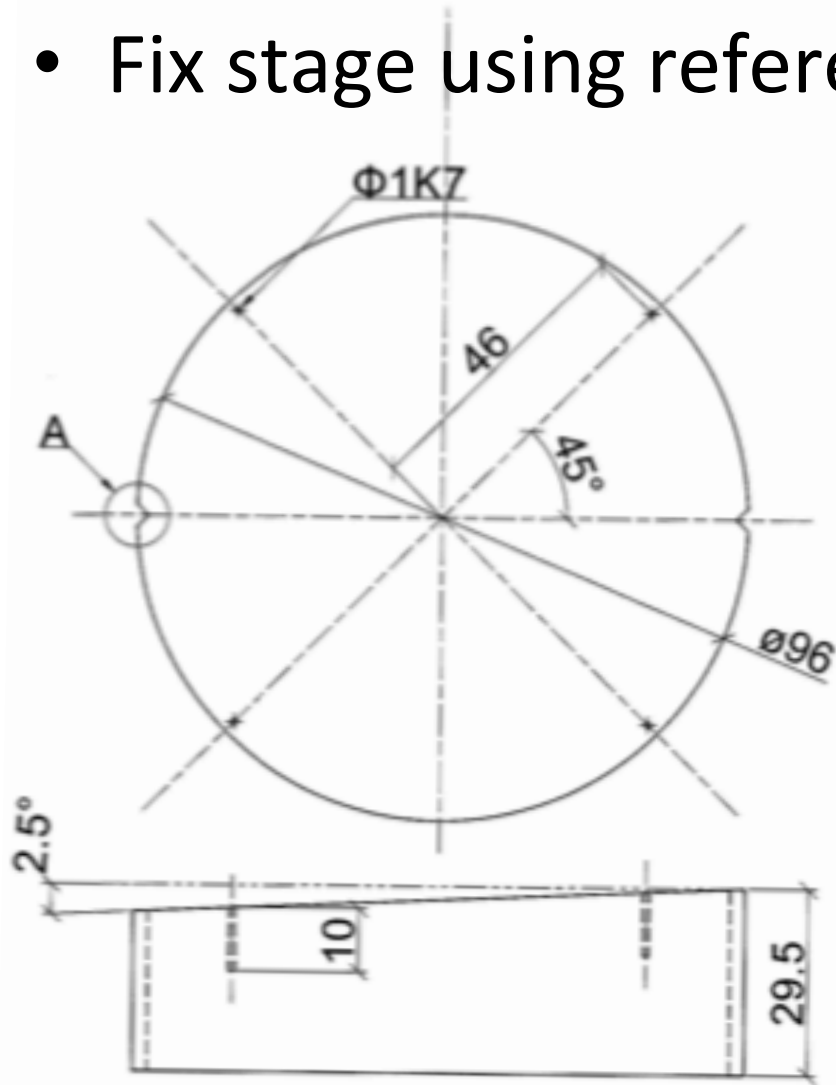
Changes from TAMA version

- Cleanroom suitable
- Perpendicularity improvement of magnets
- Use of reference mirror
- ...

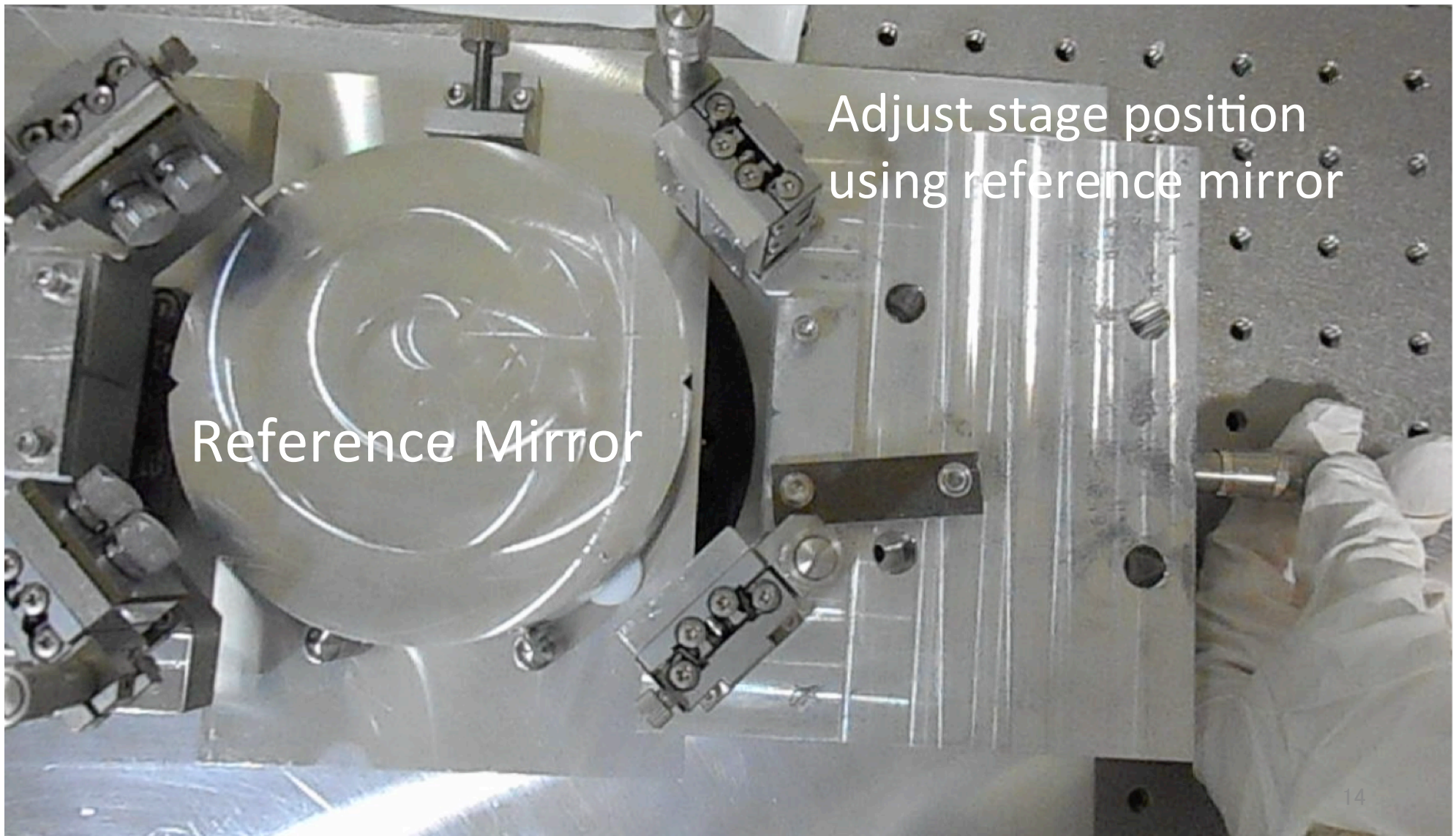


Reference Mirror

- Fix stage using reference mirror

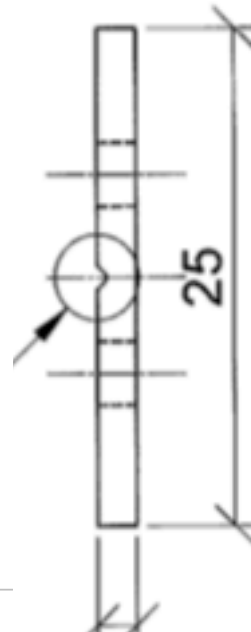
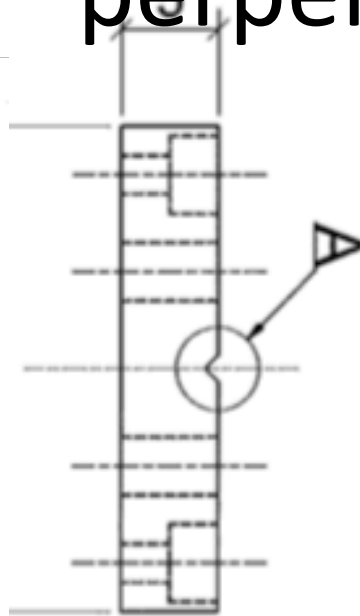
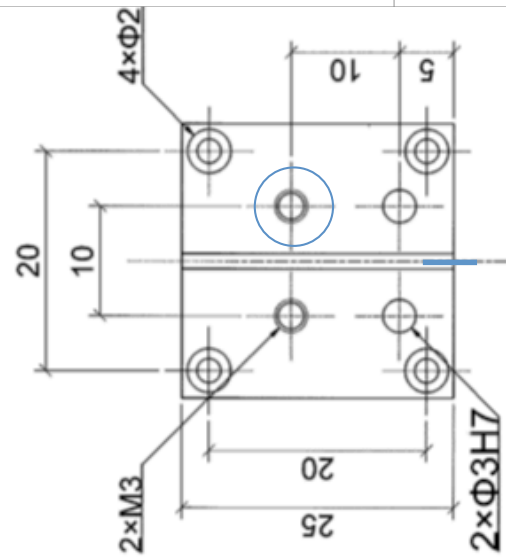


Fix fine position of stages with by using reference mirror

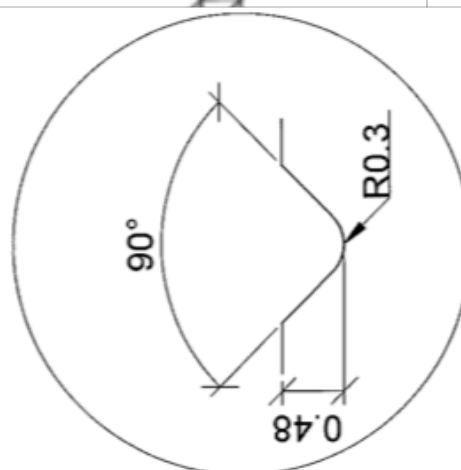
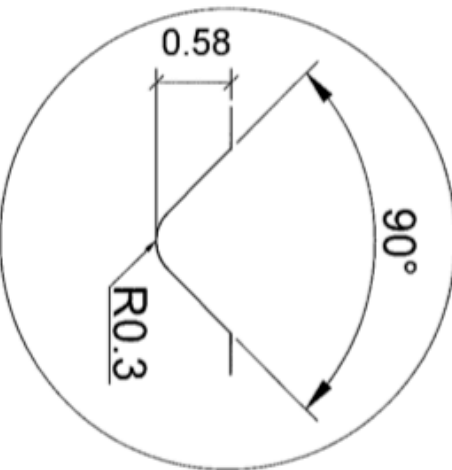


Improvement of magnet perpendicularity

Magnet diameter: 1mm
 Clamp plate A: 0.5mm
 Clamp plate B: 0.4mm
 0.1mm Teflon washer

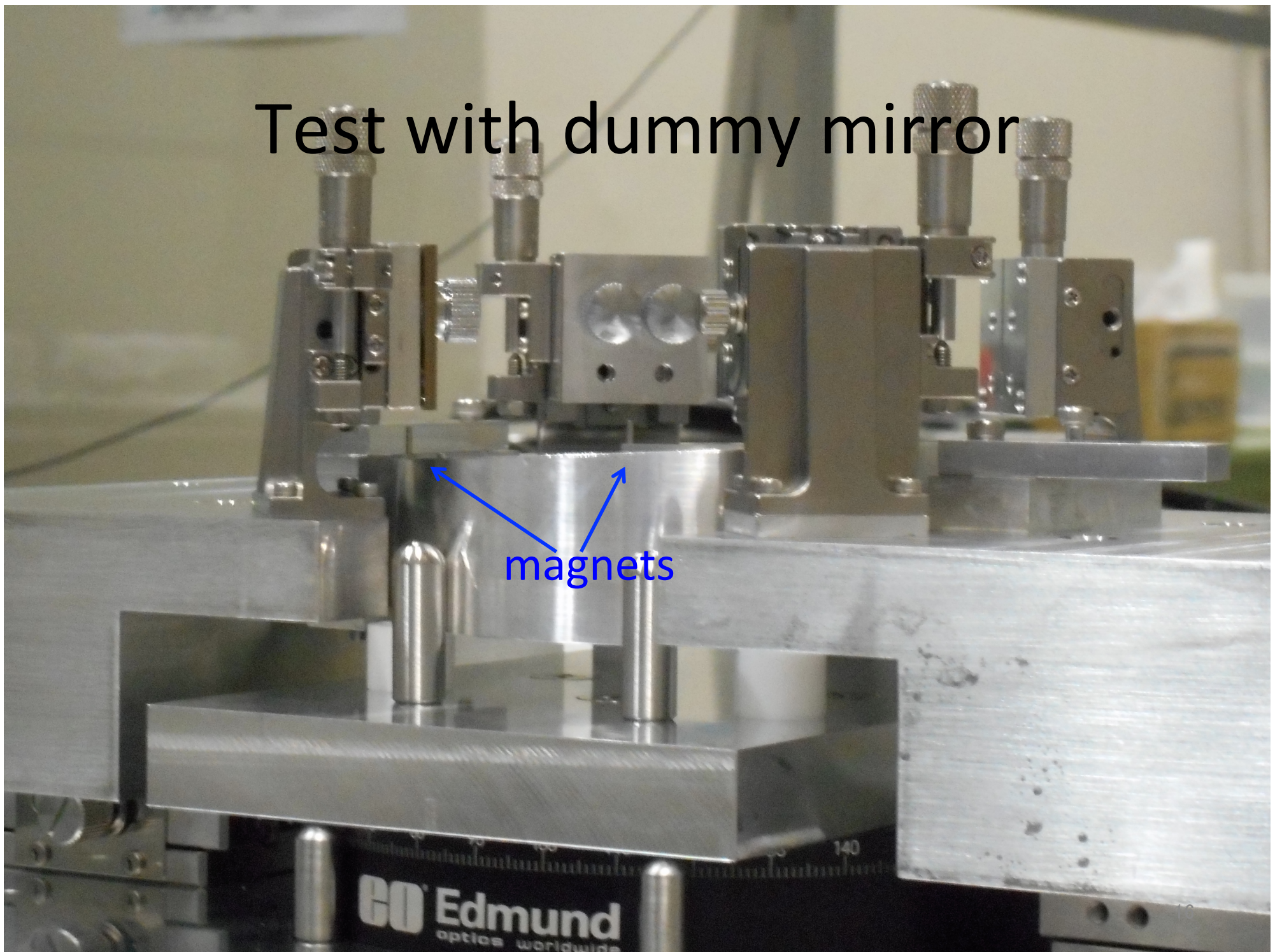


A部拡大図(10:1)



Test with dummy mirror

magnets



Summary of MC status

- MCE clean booth is ready:
Cleanliness: class 4-5,
Humidity: 76% (after 3hours dry air injection)
- Standoff design changed
- Magnet and standoff fixture jig status
under 2nd (=perhaps final) modification:
- MCE Breadboard replacement:
scheduled this week