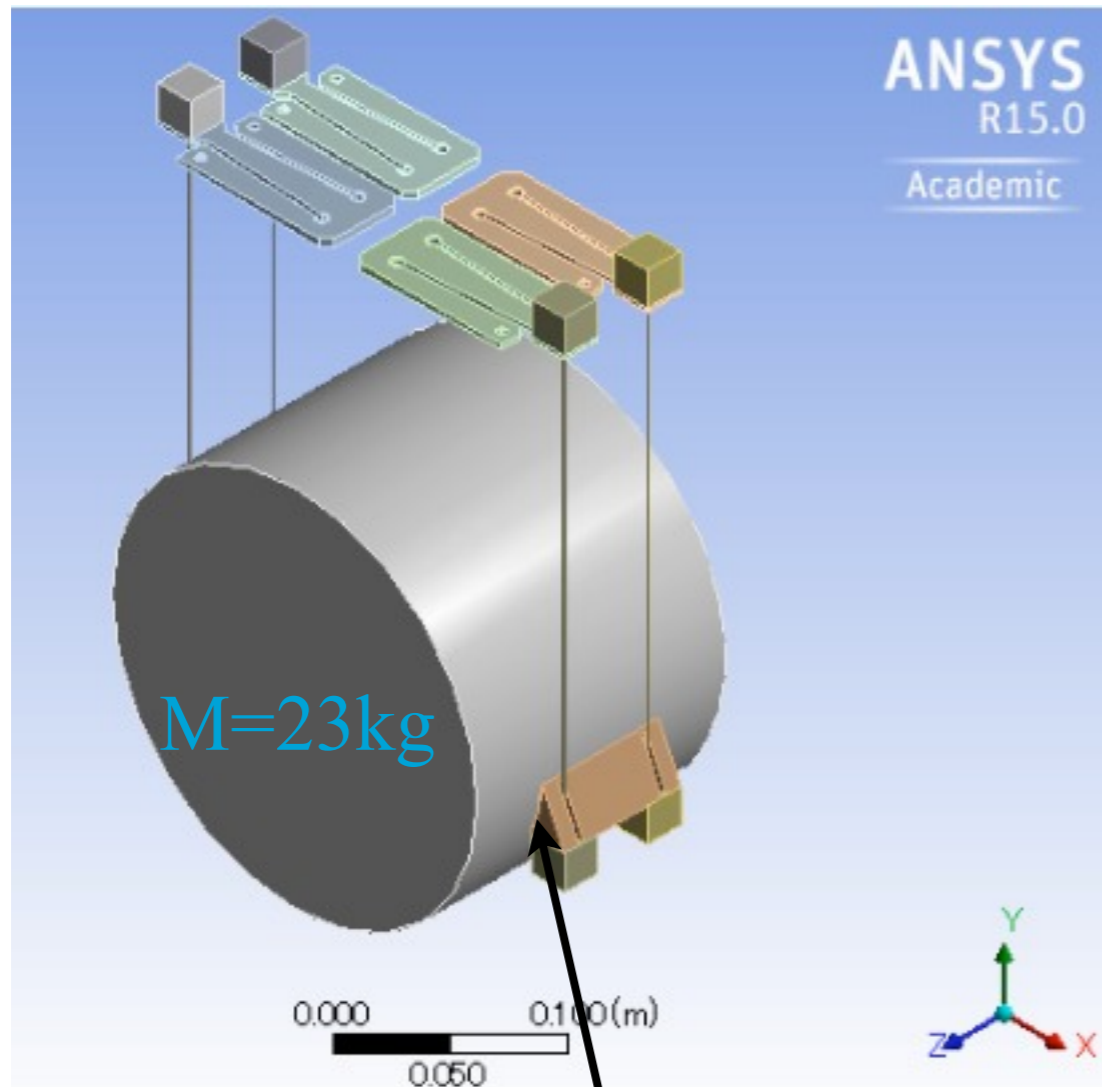


HCB cooling cycling breaking test

2014/9/8 Dan Chen

Requirement



Bond surface: 30mm*70mm

Stress on bond: 54kPa



Safety factor 20

Requirement: 1MPa

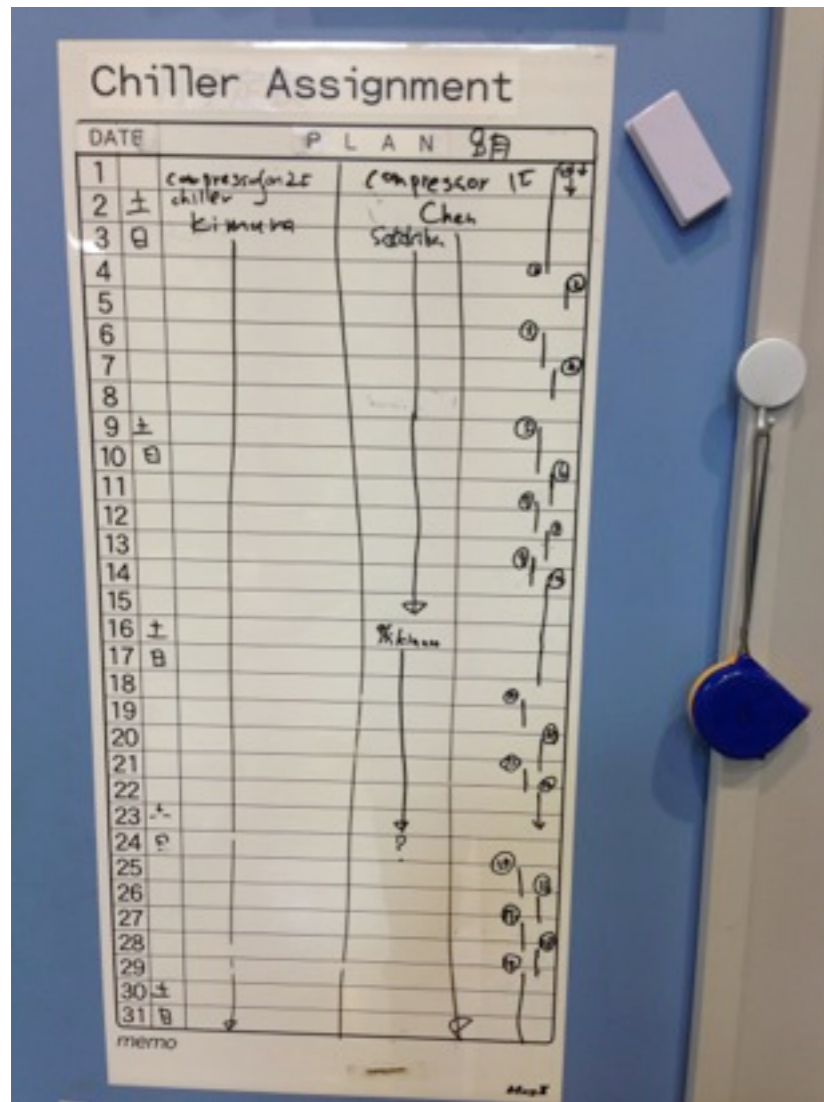
Sample

Impex sample
Axis: m to m

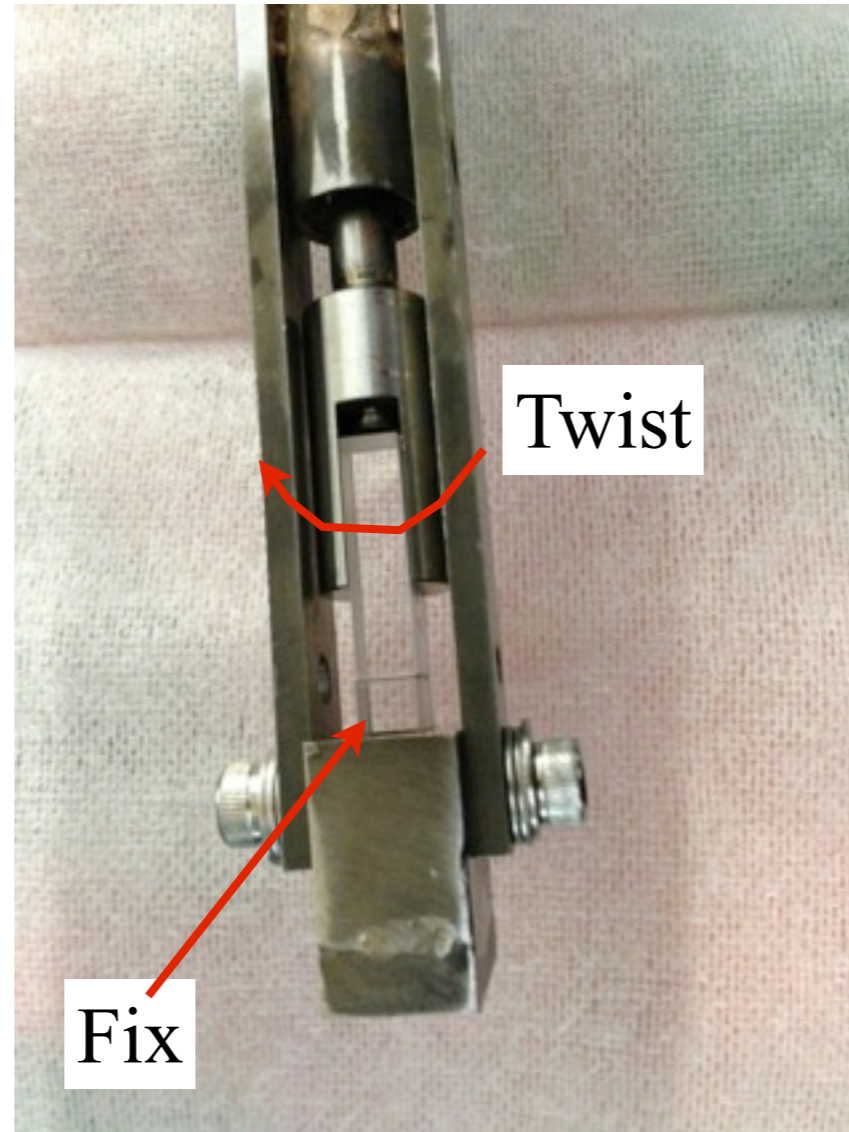
Sample size: $5 \times 10 \times 20 \text{ mm}^3$
Bond surface size: $5 \times 10 \text{ mm}^2$

Number of samples	200 degree (30 min) after thermal cycles	No 200°C experience
Cooling cycle: 0	3 sets	7 sets
Cooling cycle: 10	2 sets	8 sets
Cooling cycle: 20	2 sets	8 sets

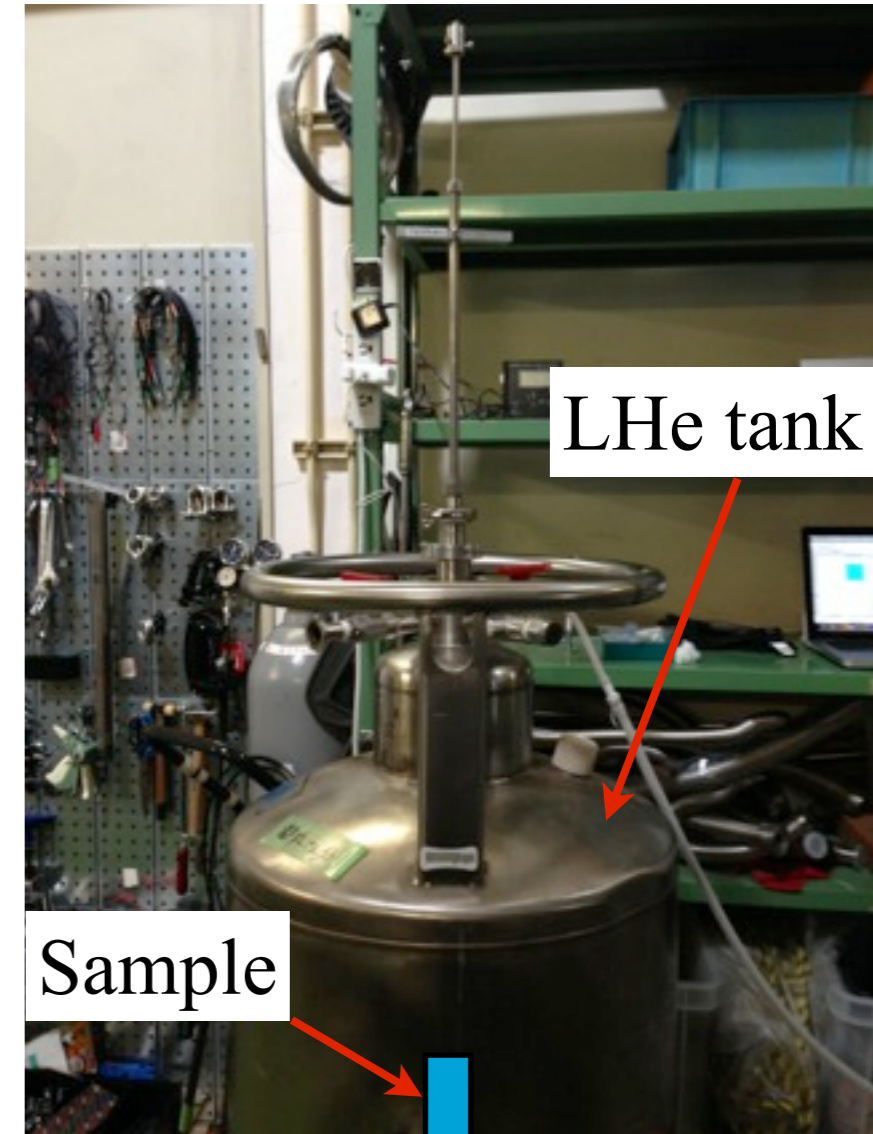
Experiment setup



Cycling memo



Breaking jig



Cryostat

We broke the samples by twisting in a liquid He tank.
Maximum torque we can apply is 5Nm (=33MPa)

Result

2014/9/4, 5 @KEK

Suzuki, Miyamoto, Tanaka, Tomaru, Dan

HCB thermal cycling breaking test

