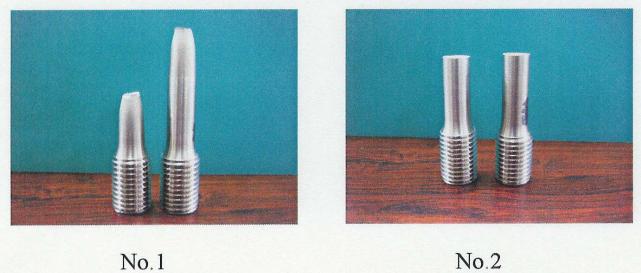
## **R&D** of Ti-SUS Joint

KEK K. Tsuchiya

- We have ben developing Ti-SUS316L Joint for the 35 MV/m cavities since their He jackets are made of Ti.
- Up to the present date, two bonding methods were examined:
  - (1) friction welding methodoptimum welding method
  - (2) HIP (Hot Isostatic Pressing) method choice of insertion metal optimum HIP condition
- Tensile tests at 300 K and 80 K and Charpy impact strength tests at 300 K and 80 K were performed.



## Friction welding sample after the tensile test



HIP

No distinct differences of the tensile strength were found.

## **Test results**

		Tensile	Charpy
		strength	strength
		(Mpa)	(J/cm <sup>2</sup> )
HIP	300K	>480	~10
HIP	80K	>700	~5
Ti	300K	~490	~29
Ti	80K	~900	~32

• For STF-1, fourteen joints were fabricated.

70 mm dia. X 7 pieces (incl. spares)

30 mm dia. X 7 pieces

Test samples were made using one joint and tensile test and Charpy test were performed.

The test results were almost the same as those of previous samples.

- All pipe-shaped joints were leak tested at 2K and confirmed the leak tightness.
- Currently, two joints have been installed into STF-0.5 cryomodule and waiting the cool-down test.

