

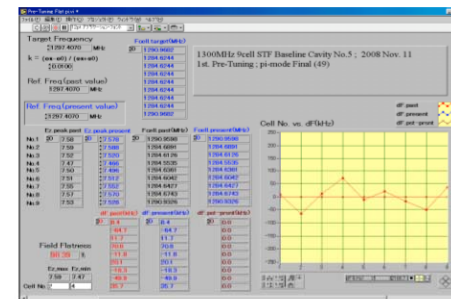
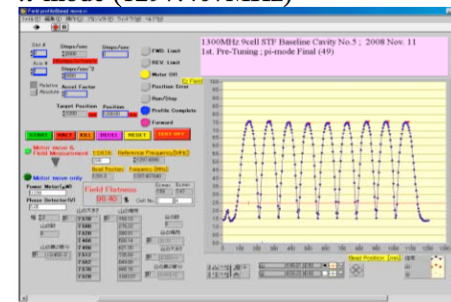
# S0 Status from KEK

H. Hayano 12.16.2008

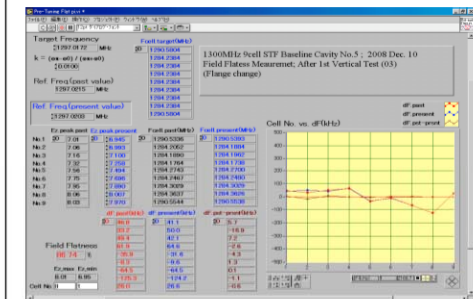
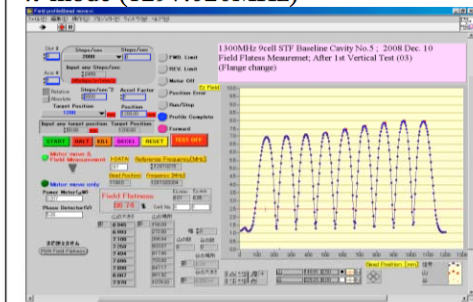
# MHI (TESLA-shape) BL-#5 cavity test

- Nov. 12 pre-tuning (98%)
- Nov. 25 Flange CP at STF.
- Nov. 26 50 $\mu$ m EP at STF,  
1 hour H<sub>2</sub>O<sub>2</sub> (50deg) +ultrasonic rinse,  
1 hour UPW + ultrasonic,
- Nov. 27 8 hours UPW HPR,  
start 100deg bake
- Nov. 30 bake stop (total 64 hours)
- Dec. 1-3 VT preparation
- Dec. 4-5 Vertical test (1<sup>st</sup> Test)
- Dec. 10 field flatness meas.(87%)
- Dec. 11- under optical inspection

After 1st. Pre-Tuning; Nov.11, 2008  
Fo=1297.41MHz Field Flatness=98.4%  
 $\pi$ -mode (1297.407MHz)



After 1st. Vertical Test; Dec.10, 2008  
Fo=1297.02MHz Field Flatness=86.7%  
 $\pi$ -mode (1297.020MHz)



# BL #5 1st Vertical Test result

27MV/m  
 Limited by field emission

Temp sensors on the pit and bump  
 did not show any spot heating.

heating happens on

cell#1: 34, 178

cell#2: 46, 179,180,181

cell#3:25,36,47

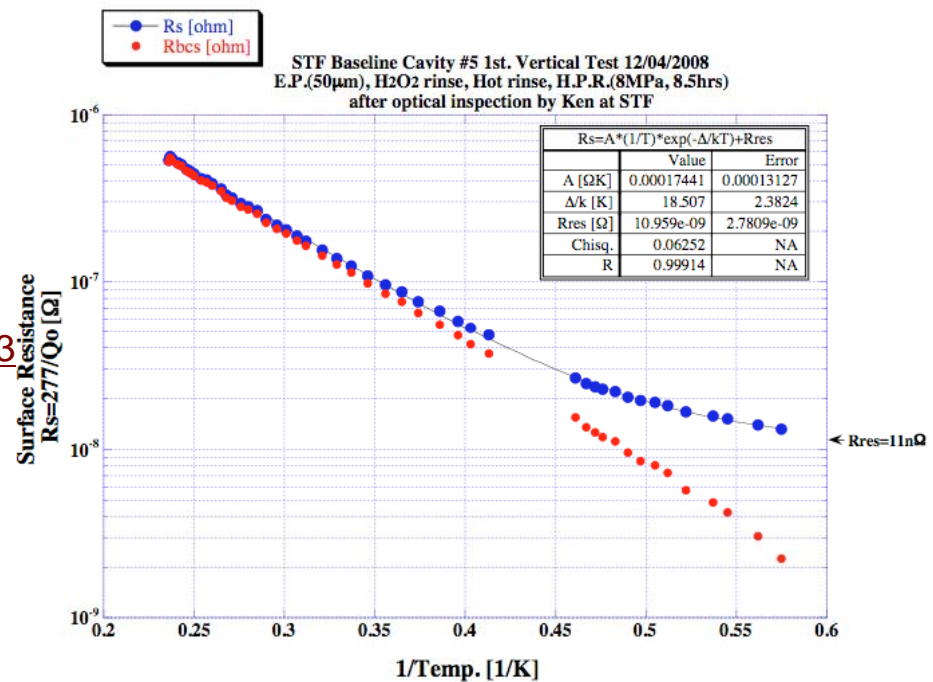
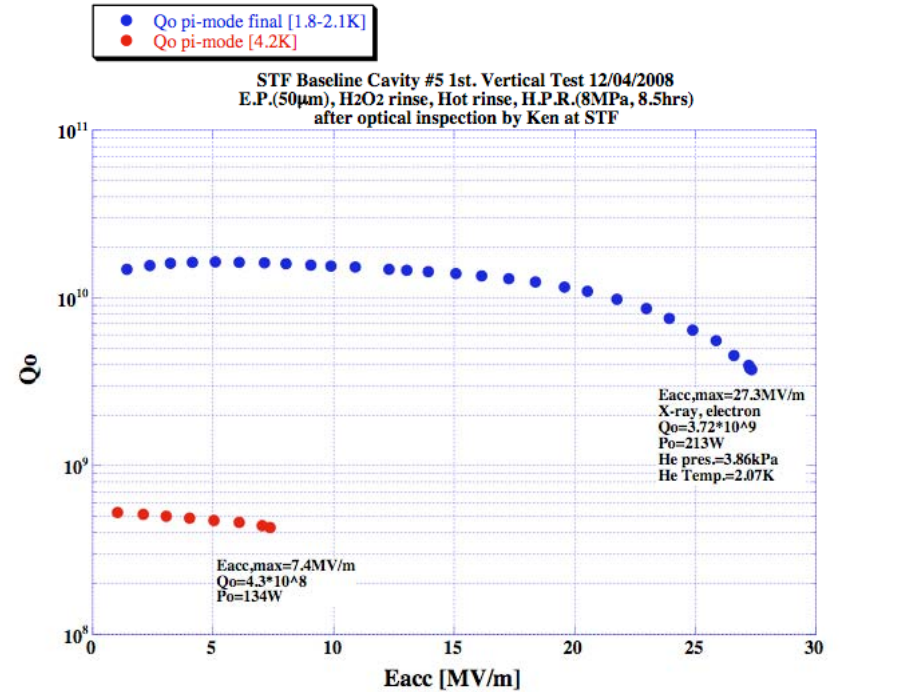
cell#4:15,26,158

cell#5:5,16,49,71,126,195,196,197,200,220,239,243

cell#6:6

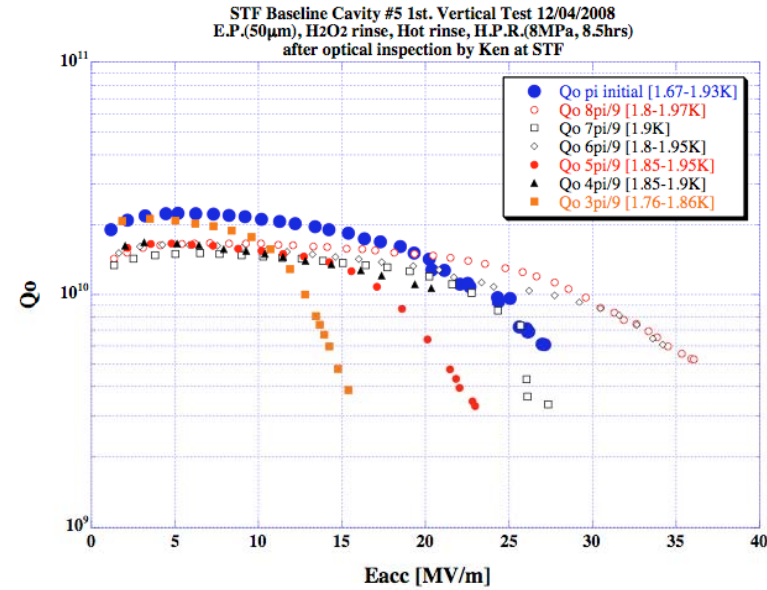
cell#7:51,62,207,208

(sensor numbers are listed)



# BL #5 1st Vertical Test result

Other pass-band mode measurement



	Cell 1&9[MV/m]	Cell 2&8[MV/m]	Cell 3&7[MV/m]	Cell 4&6[MV/m]	Cell 5[MV/m]	Comment
$\pi$ Initial	27.14	27.14	27.14	27.14	27.14	Field emission
Final	27.34	27.34	27.34	27.34	27.34	$Q_0=3.7E9$ , Ploss=213W
$8\pi/9$	36.06	32.09	23.80	13.34	0.0	Power Stop. Heat at #3cell $Q_0=5E9$ , Ploss=127W
$7\pi/9$	27.34	14.49	5.47	21.05	29.25	Power Stop. $Q_0=3E9$ , Ploss=125W
$6\pi/9$	34.21	0.0	34.21	34.21	0.0	Power Stop. $Q_0=6.1E9$ , Ploss=126W
$5\pi/9$	23.0	15.64	27.14	4.6	29.21	Power Stop. $Q_0=3.3E9$ , Ploss=130W
$4\pi/9$	20.36	26.67	11.61	29.52	0	Quench.Heat at #9cell $Q_0=1.1E10$ , Ploss=44W
$3\pi/9$	15.40	30.80	15.40	15.40	30.80	Quench.Heat at #5cell $Q_0=3.9E9$ , Ploss=116W
Eacc,max	>36.1	>32.1	>34.2	>34.2	>30.8	

# SIF Baseline cavity #5

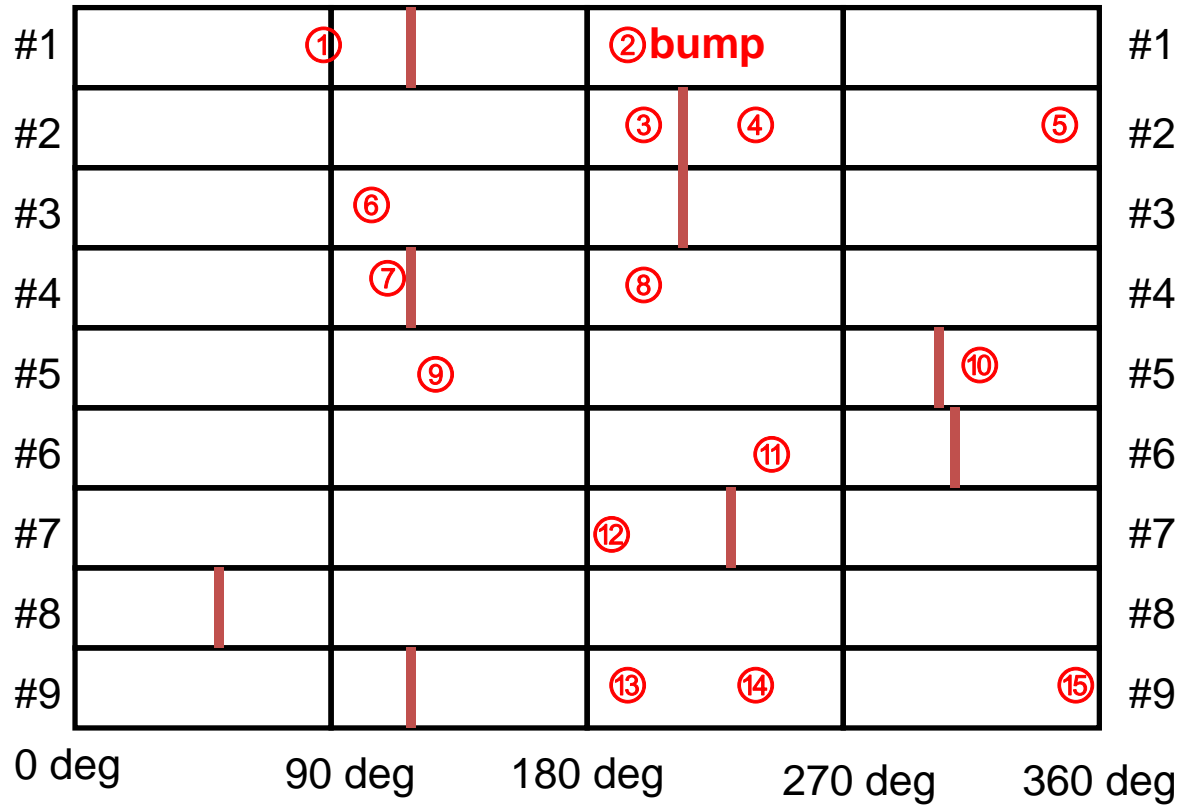
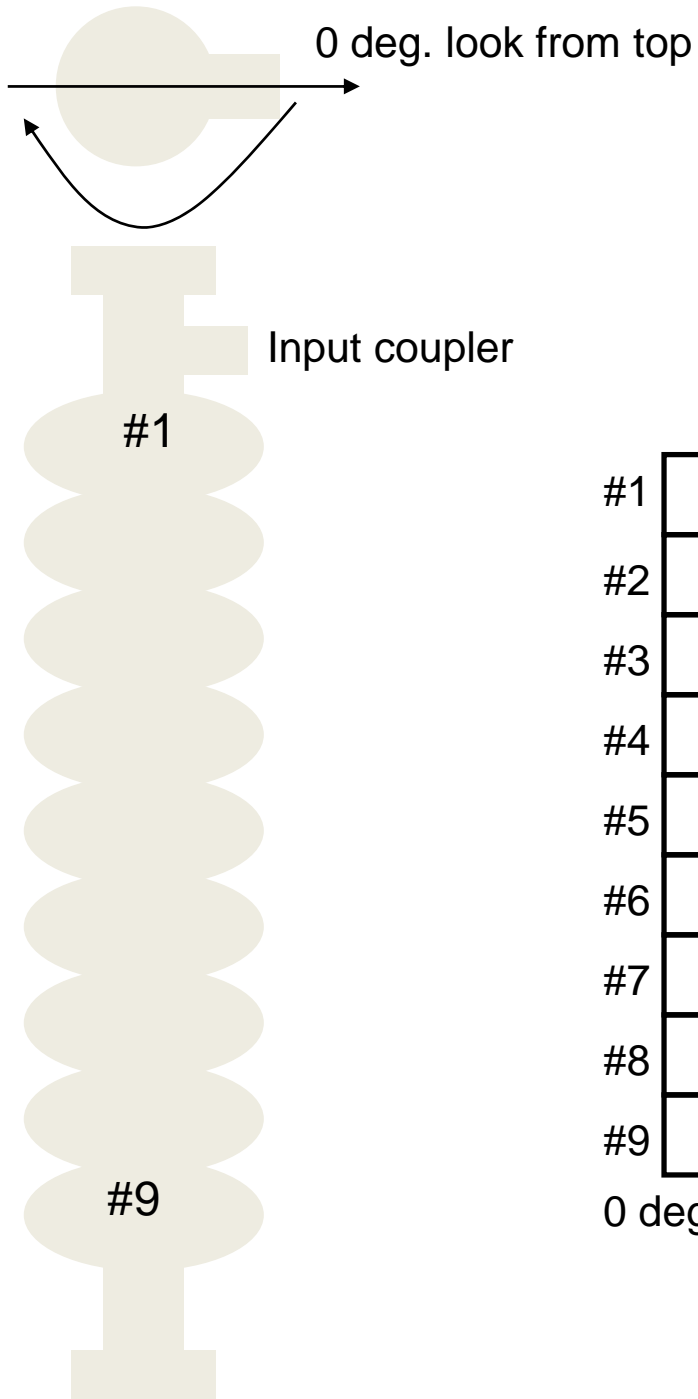
( 1 )

on the equator

| weld end

② is bump

others are pits



# STF Baseline cavity #5 ( 2 )      pit/bump details

No.	cell	Angle [deg.]	Diameter [um]	Type	Size [um]	Location		No.
1	#1	88	200	Pit	12	HAZ,		1
2	#1	200	800	Bump	50	HAZ,		2
3	#2	219	400	Pit	25	HAZ,		3
4	#2	248	300	Pit	25	HAZ,		4
5	#2	323	250	Pit	10	HAZ,		5
6	#3	100	300	Pit	15	HAZ,		6
7	#4	110	300	Pit	10	HAZ,		7
8	#4	196	300	Pit	10	HAZ,		8
9	#5	139	400	Pit	10	HAZ,		9
10	#5	303	400	Pit	10	HAZ,		10
11	#6	253	250	Pit	15	HAZ,		11
12	#7	184	250	Pit	15	HAZ,		12
13	#9	190	400	Pit	25	HAZ,		13
14	#9	240	400	Pit	25	HAZ,		14
15	#9	353	300	Pit	10	HAZ,		15

# MHI (TESLA-shape) BL-#6 cavity test in this week

Nov. 13 pre-tuning (98%)

Dec. 09 Flange CP at STF.

Dec. 10 50 $\mu$ m EP at STF,  
1 hour H<sub>2</sub>O<sub>2</sub> (50deg) +ultrasonic rinse,  
1 hour UPW + ultrasonic,

Dec. 11 8 hours UPW HPR,  
start 100deg bake

Dec. 13 bake stop (total 42 hours)

Dec. 16-17 VT preparation

Vertical test (1<sup>st</sup> Test) is scheduled on Dec. 18

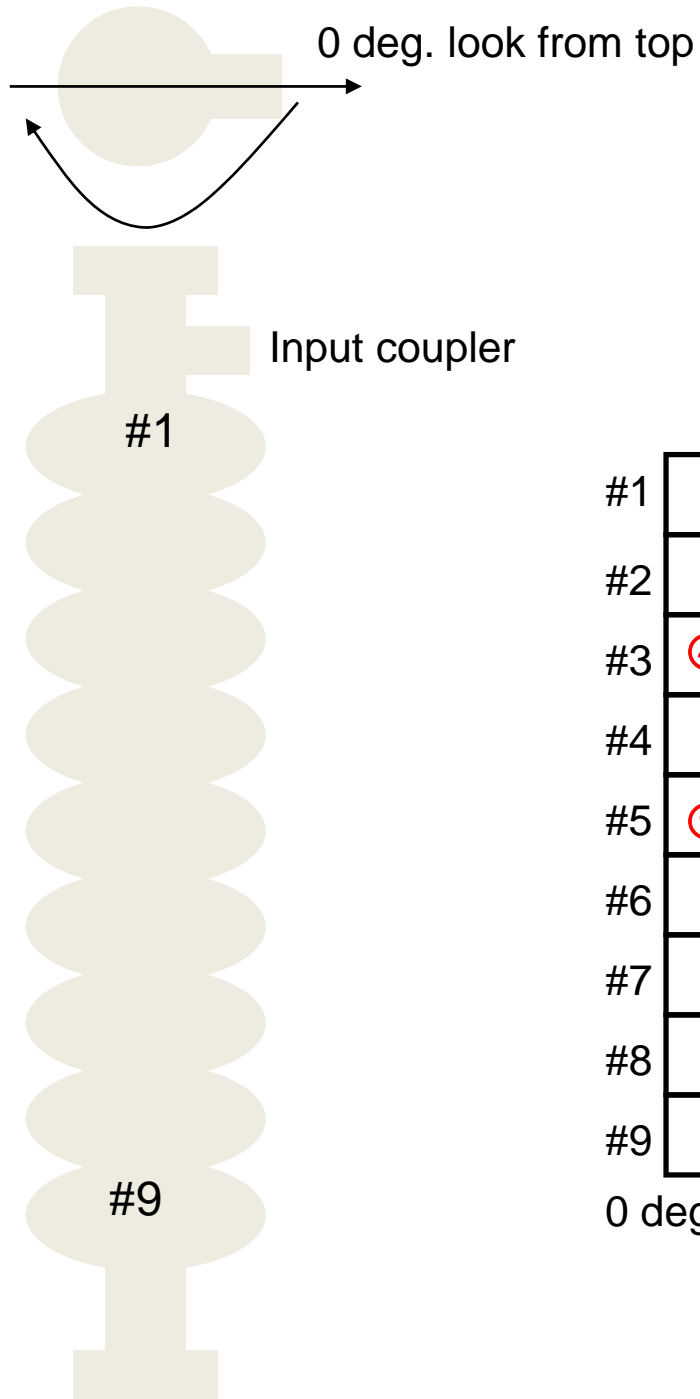
# SIF Baseline cavity #6

( 1 )

weld end

on the equator

All are pits



#1					#1		
#2		①	②	③	#2		
#3	④	⑤			⑥	⑦	#3
#4		⑧					#4
#5	⑨						#5
#6		⑩					#6
#7		⑪	⑫				#7
#8				⑬	⑭	⑮	#8
#9							#9
	0 deg	90 deg	180 deg	270 deg	360 deg		



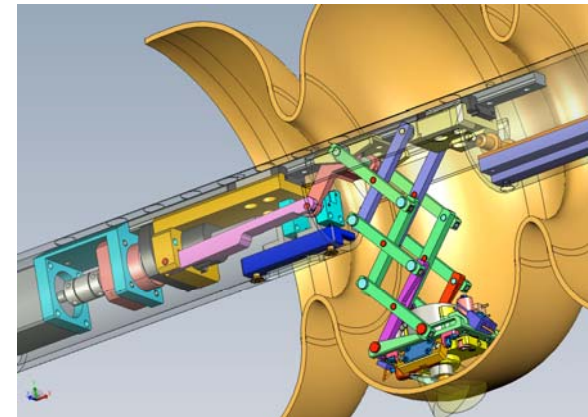
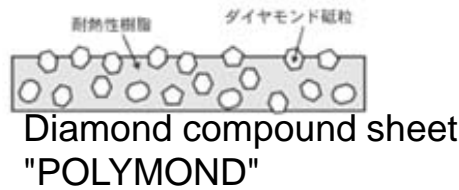
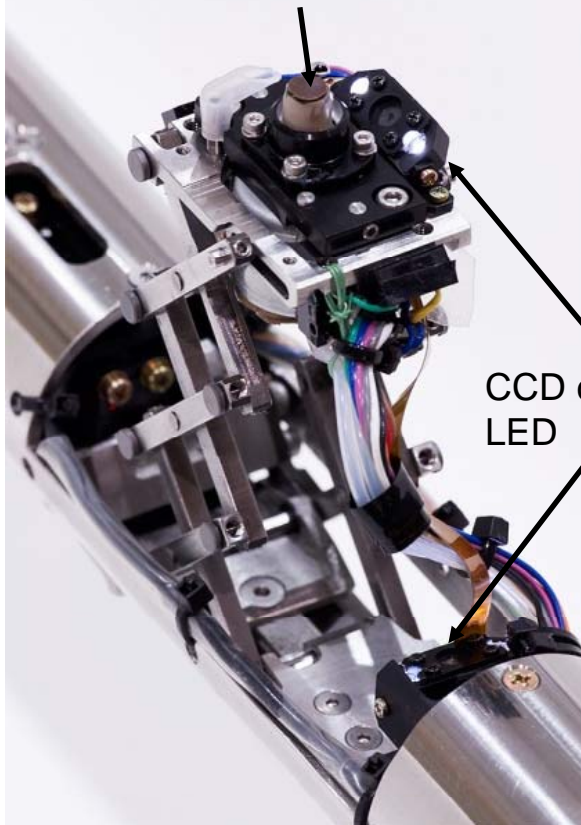
# STF Baseline cavity #6 ( 2 )      pit/bump details

No.	cell	Angle [deg.]	Diameter [um]	Type	Size [um]	Location		No.
1	#2	116	350	Pit	20	HAZ,		1
2	#2	164	300	Pit	10	HAZ,		2
3	#2	200	500	Pit	20	HAZ,		3
4	#3	10	400	Pit	30	HAZ,		4
5	#3	95	300	Pit	15	HAZ,		5
6	#3	287	350	Pit	15	HAZ,		6
7	#3	353	300	Pit	15	HAZ,		7
8	#4	103	400	Pit	30	HAZ,		8
9	#5	10	250	Pit	10	HAZ,		9
10	#6	115	250	Pit	10	HAZ,		10
11	#7	45	200	Pit	15	HAZ,		11
12	#7	66	300	Pit	15	HAZ,		12
13	#8	216	300	Pit	12	HAZ,		13
14	#8	232	300	Pit	12	HAZ,		14
15	#8	285	300	Pit	10	HAZ,		15

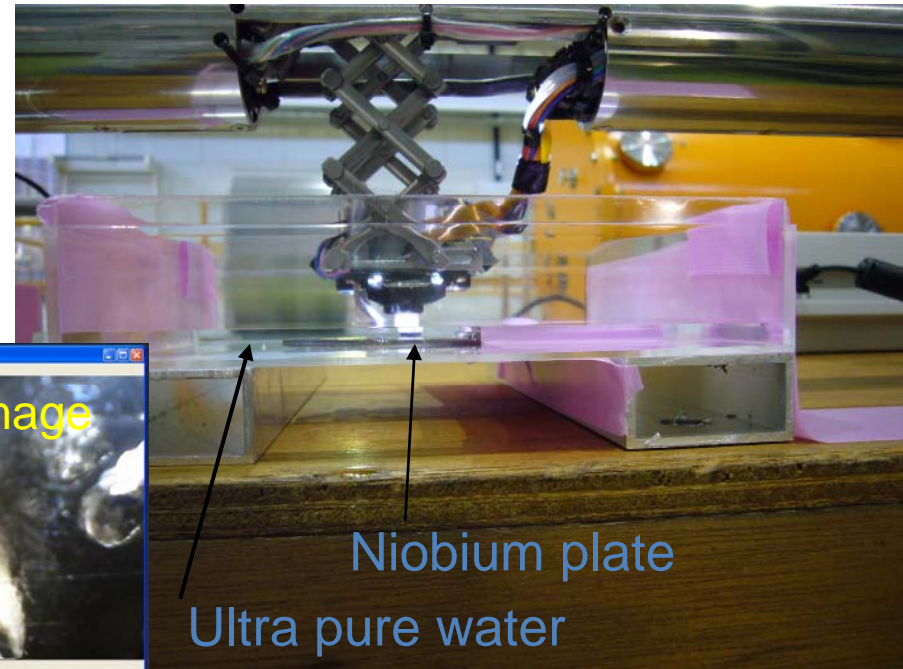
# Local grinder Test using sample plate

Inner surface grinder development:  
the first proto-type arrived on Nov. 10.

Grinder Head with Diamond seat



CCD camera +  
LED



extension of grinder head

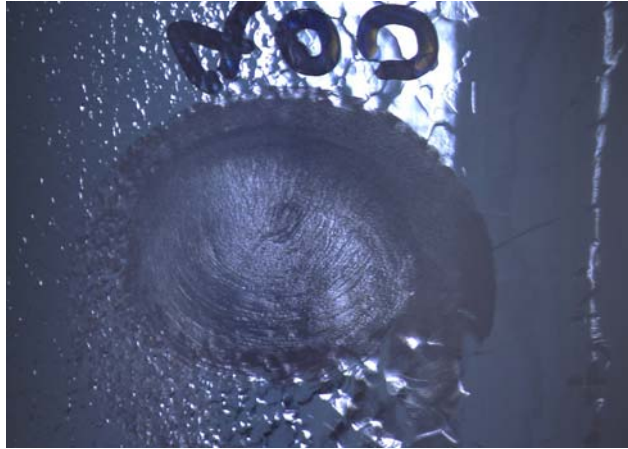


Niobium plate

Ultra pure water

# Grind Test Results

Just after grinding (~6mm diameter region)



15min grind by polymond#400  
(40-60µm diamond)

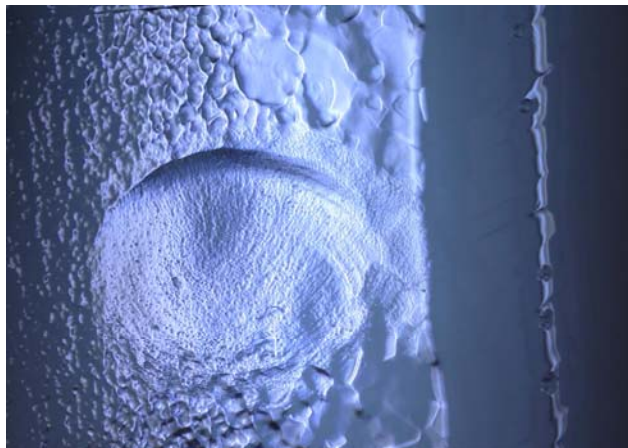


15min grind by polymond#1000  
(10-20µm diamond)

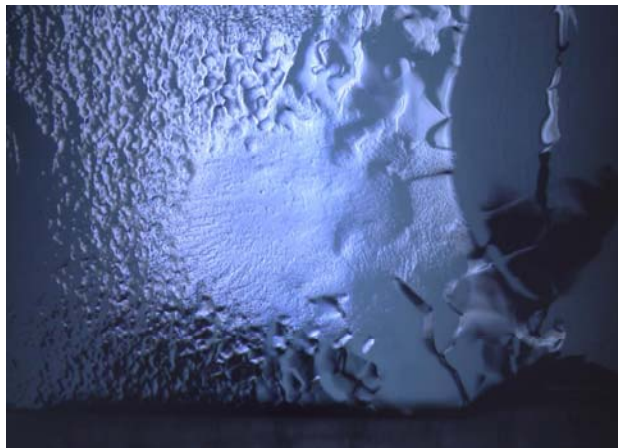


30min grind by polymond#3000  
(3-8µm diamond)

After 50µm EP



NG



Good



excellent

## Proposal to DESY cavities

AC71,AC74,AC80 must return back till Jan. 22  
(custum issue).

Vertical Test can not be done until then.

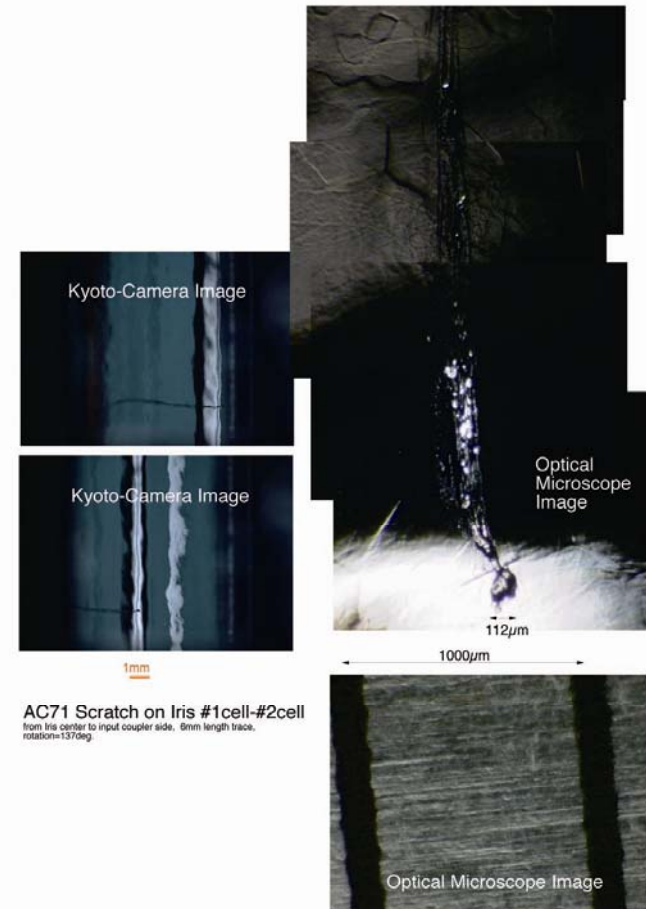
STF VT is full of schedule for S1G cavities  
(man power problem).

I am interesting to grind scratch on AC71 iris between #1-#2.

grind it in December, pre-tune, EP 50 $\mu$ m, rinse, HPR,  
and bake in Jan 5-9.

Send them back Jan. 13, will arrive DESY on Jan 20-22.

VT at DESY? or VT at Jlab?



## Proposal to FNAL

I am interesting to grind beads inside of AES003.

borrow it in January. inspect it, grind it in February, pre-tune, EP 50 $\mu$ m, rinse,  
HPR and bake.

Send them back on March, would like to ask VT measurement in Jlab.