

Summary of AWG7: RF structure/Technologies

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LCWS12 Oct. 25 (Thursday)

	AWG6:Technical Systems	AWG7:RF structure/Technologies	
AM1	Joint session : magnets and instrumentation		
AM2	Joint session : RF system and controls		
PM1	Instrumentation	Cavities	
PM2	discussion	Field emission	

Cavity session:

- (1)Recent High gradient test result at KEK**
- (2)Recent High-gradient test result at CERN**
- (3)Seamless ILC cavity fabrication**

Toshiyasu Higo(KEK)
Jan Kovermann(CERN)
John Buttles(BTM)

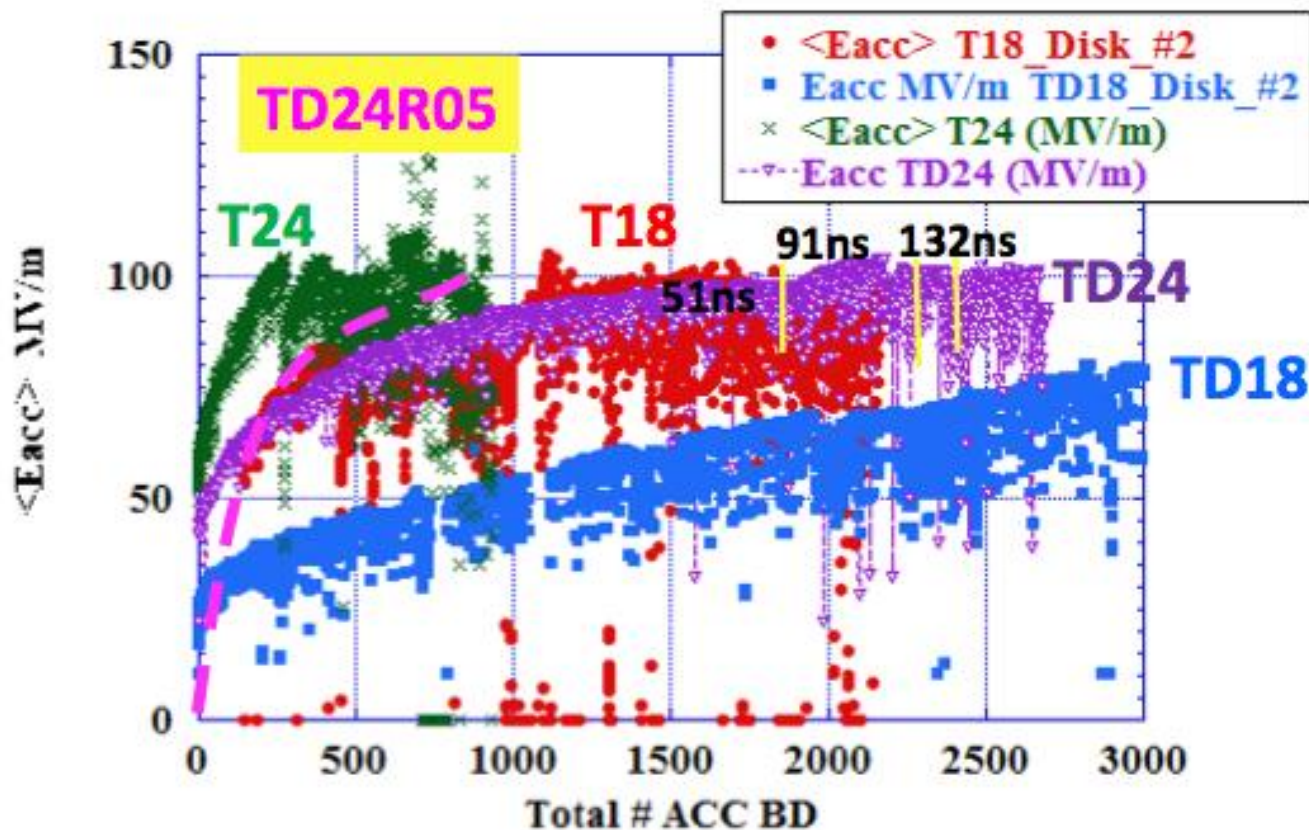
Field emission session:

- (1)Field emission mapping measurement**
- (2)Field emission and SEM surface mapping in Uppsala**
- (3)Short review of recent Mevarc Workshop**
- (4)Localization of field emitter in a 9-cell cavity**
- (5)Recent surface study in KEK-STF**

Yasuo Higashi(KEK)
Tomoko Muranaka(CERN)
Walter Wuensch(CERN)
Rongli Geng(JLAB)
Hitoshi Hayano(KEK)

Difference in processing speed among four+1 structures

Eacc vs #ACC-BD



Number of ACC-BD's until reaching the same level in (T_p , E_{acc})

Ranking

- T24
 - TD24R05?
 - T18
 - TD24
 - TD18
- ↓

Magnetic field!?!?

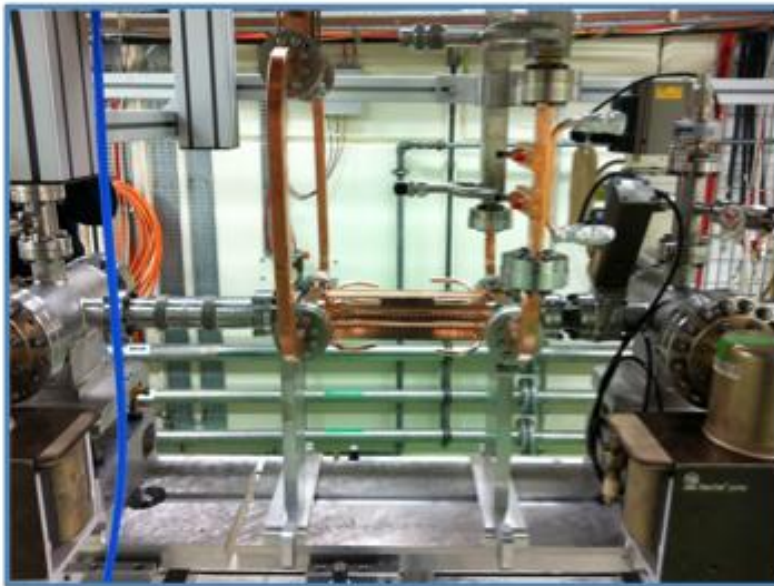
Layout of the CERN x-band test stand (X-box 1)

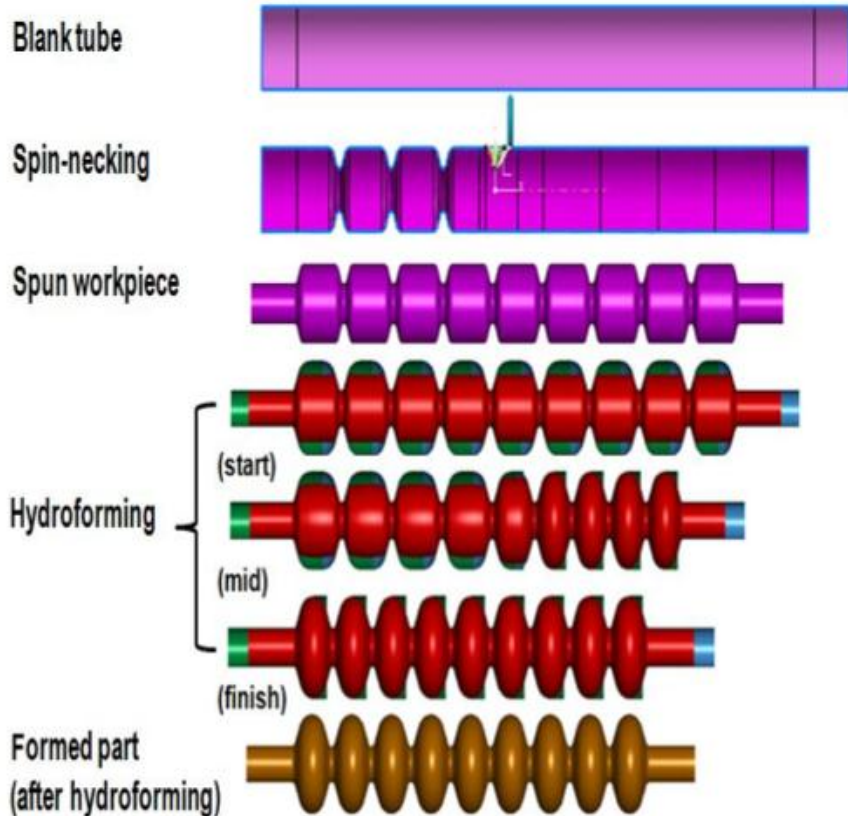
Clockwise from top-left:

- Modulator
- Pulse compressor
- DUT + connections
- Accelerating structure



Gallery
.....
Bunker





SRF Cavity: ILC 9-cell

Process: high-volume production

Blank: seamless tube (~Dia.150mm)

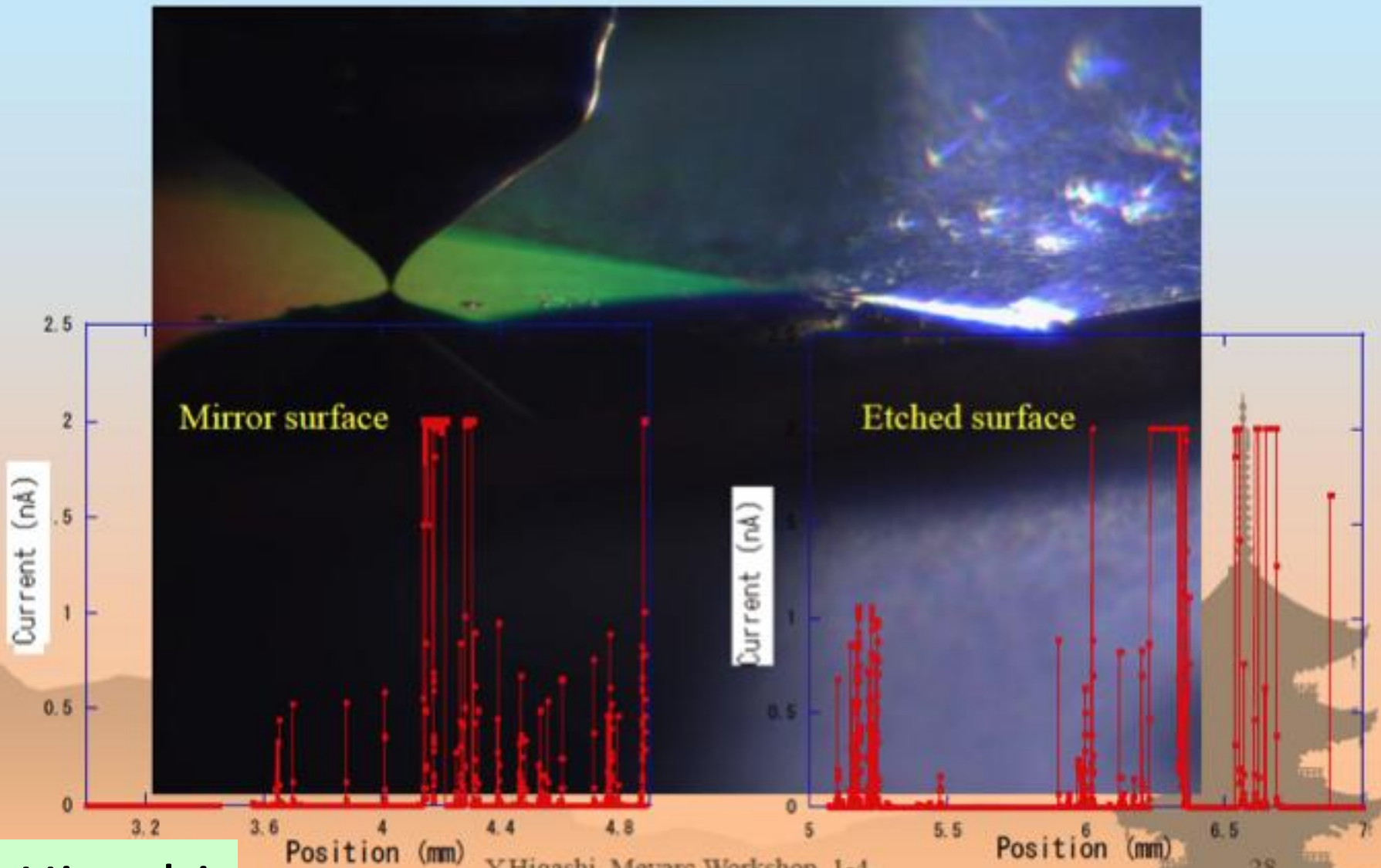
↓
Spin-necking (preform)

↓
Tube hydroforming (expansion)

⋮
[**Calibration** (hydroforming 2)]

Challenges: complicated spin-necking
FEA process modeling.

Measured field emission distributions

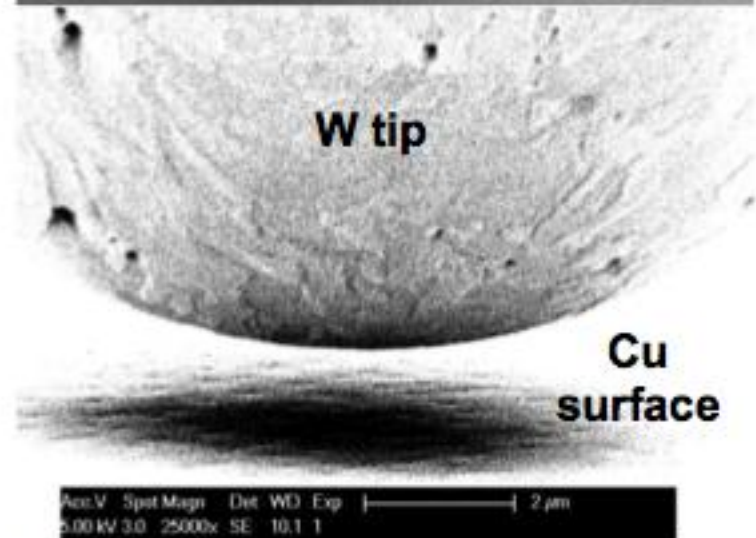
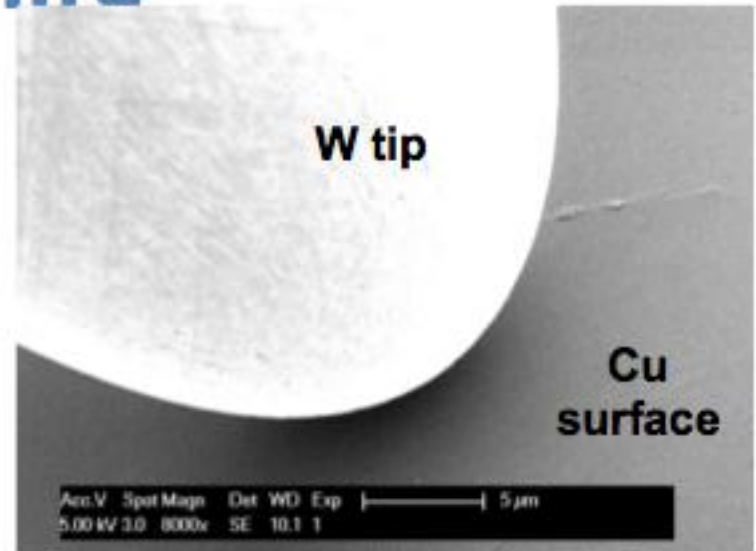
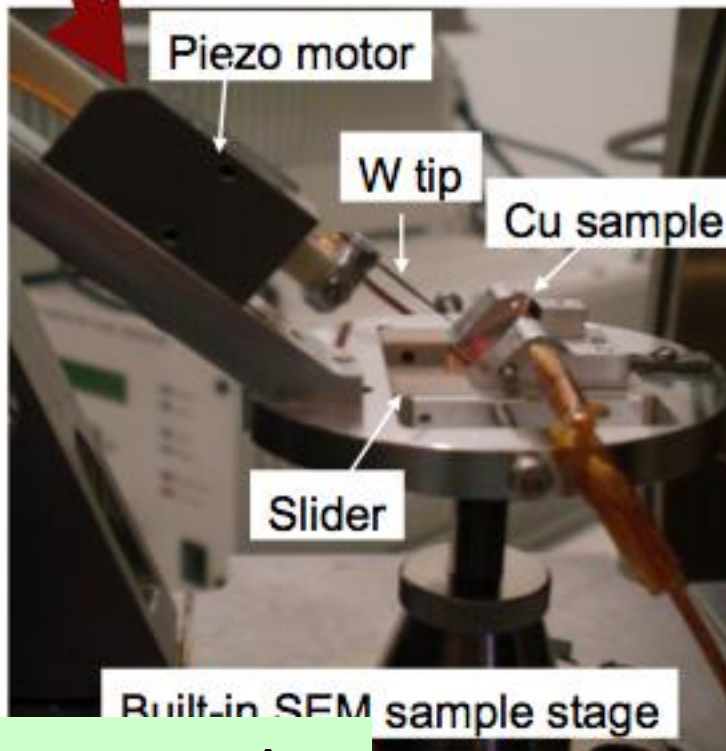


Y. Higashi

Y.Higashi, Mevare Workshop, 1-4
October, 2012

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Real life





MEVARC3 – Breakdown physics workshop hosted this year by Sandia National Laboratory



Summary | Lodging & Location | Agenda

3rd International Workshop on Mechanisms of Vacuum Arcs (MeVArC 2012)

Monday, October 01, 2012 8:00 PM - Thursday, October 04, 2012 (Mountain Time)

Hotel Albuquerque at Old Town
1-866-505-7525
800 Rio Grande Blvd., 16th
Albuquerque, New Mexico 87104
United States
[Map and Directions](#)

Vacuum arcs are a concern in essentially every vacuum electronic device. Sometimes they form the basis for device operation, but all too often they are the primary failure mode. They are often described as high voltage breakdown (HVB) and electrostatic discharge (ESD) as well. The purpose of this workshop is to bring together scientists and engineers to discuss the latest improvements in our understanding of vacuum arcs, including their initiation and evolution.

Register Now

Contact Information

Admin
Ellen Anderson
Email: eaanders@sandia.gov
505-284-4861

Technical
Matthew Hopkins
Email: mhopk1@sandia.gov
505-284-6376

Albuquerque International Ballon Fiesta
October 9-11, 2011

Specific topics include:

- High electric field gradient devices (e.g., accelerators)
- Effect of electrode material processing
- Material electrode damage characterization
- Primary mechanisms for discharge
- Diagnostic methods for interrogating breakdown, surface structure, plasma constituents, etc.
- Modeling and simulation

We welcome new areas of investigation in addition to the above. The multidisciplinary nature of vacuum arcs and vacuum devices provides a rich environment for finding physics of shared interest from multiple sources.

Past workshops:

- 1st workshop, May 2010, CERN
- 2nd workshop, June 2011, Univ. Helsinki

Organizers:

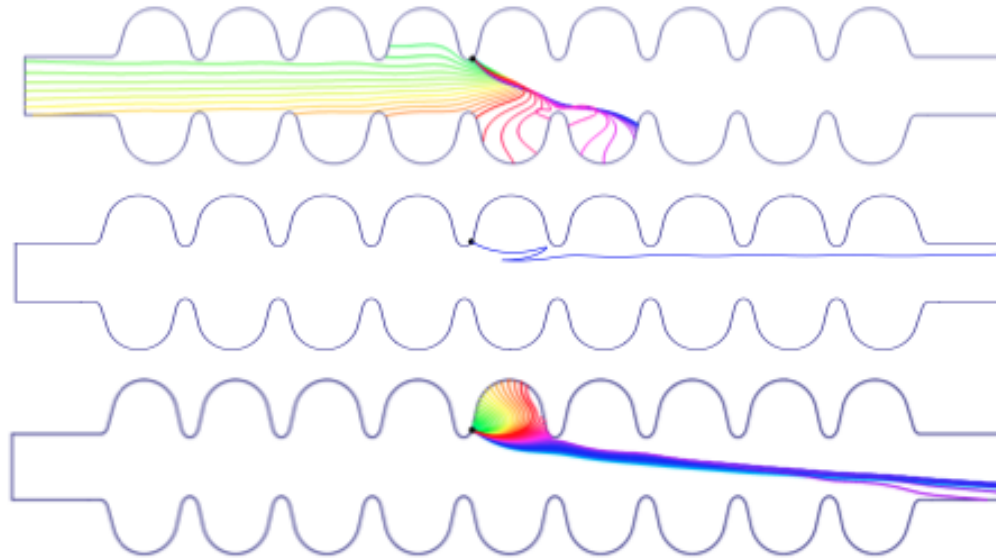
- Matt Hopkins (mhopk1@sandia.gov), Sandia National Laboratories, USA
- Flyura Djurabekova (flyura.djurabekova@helsinki.fi), University of Helsinki, Finland
- Walter Wuensch (walter.wuensch@cern.ch), CERN, Switzerland
- Andre Anders (aanders@lbl.gov), Lawrence Berkeley National Laboratory, USA

<http://www.regonline.com/builder/site/default.aspx?EventID=1065351>
<https://indico.cern.ch/conferenceDisplay.py?ovw=True&confId=208932>

W. Wuensch

LCWS2012

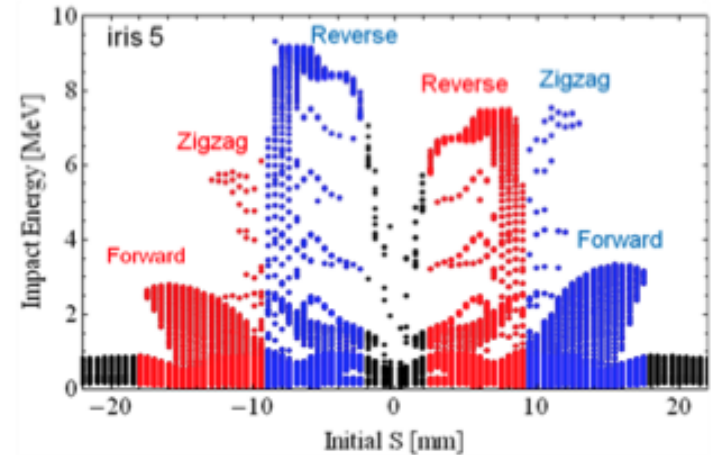
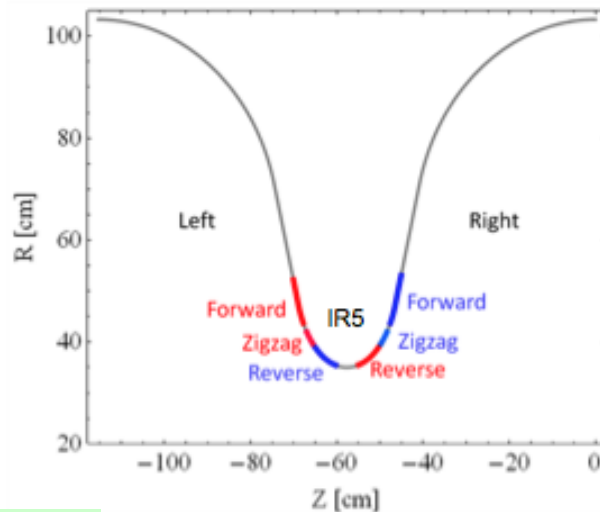
3 Types of “Long Range” Trajectories



Emission in region
>>> “Reverse type”

Emission in region
>>> “Zigzag type”

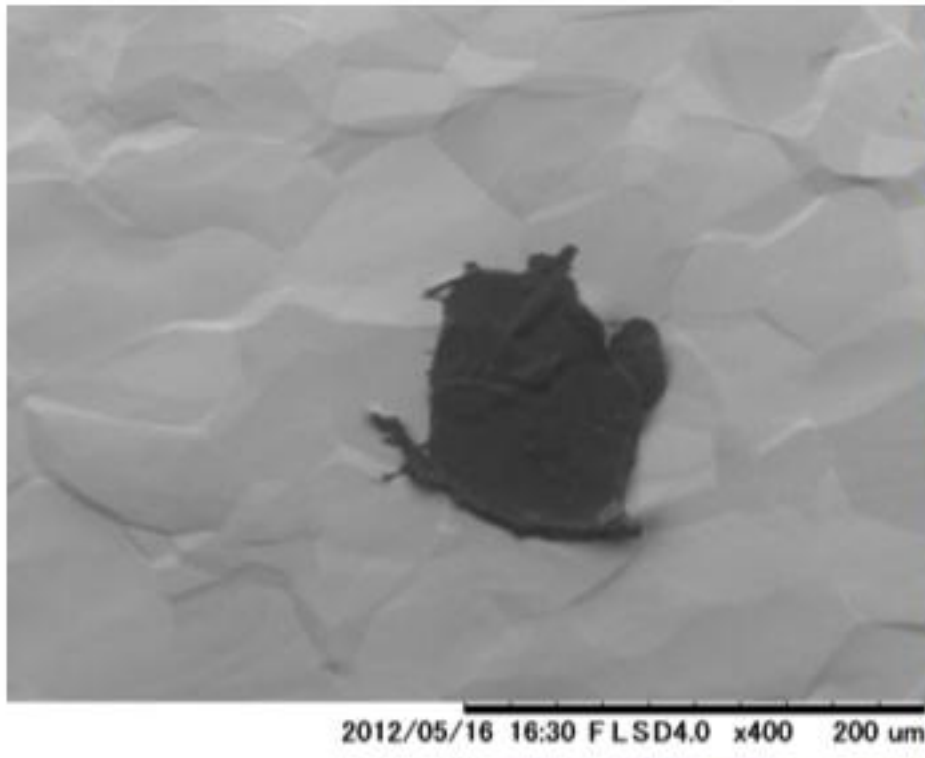
Emission in region
>>> “Forward type”



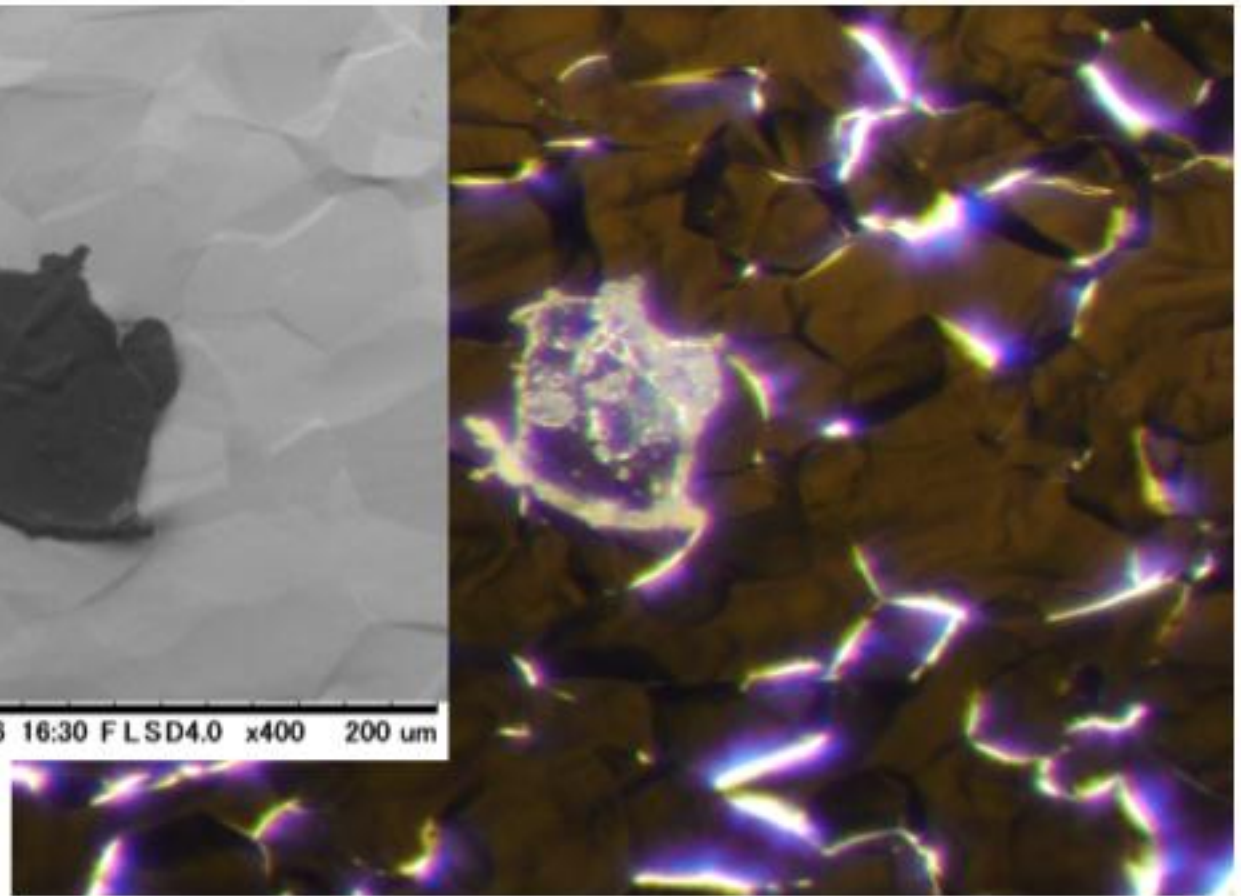
Impact position VS impact energy distribution

Found contamination on BCP treated Nb surface

SEM image
(black)



Optical Microscope image
(shiny)



End of slide