Summary of AWG7: RF structure/Technologies

A. Yamamoto, C. Nantista, W. Wuensch, H. Hayano

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	

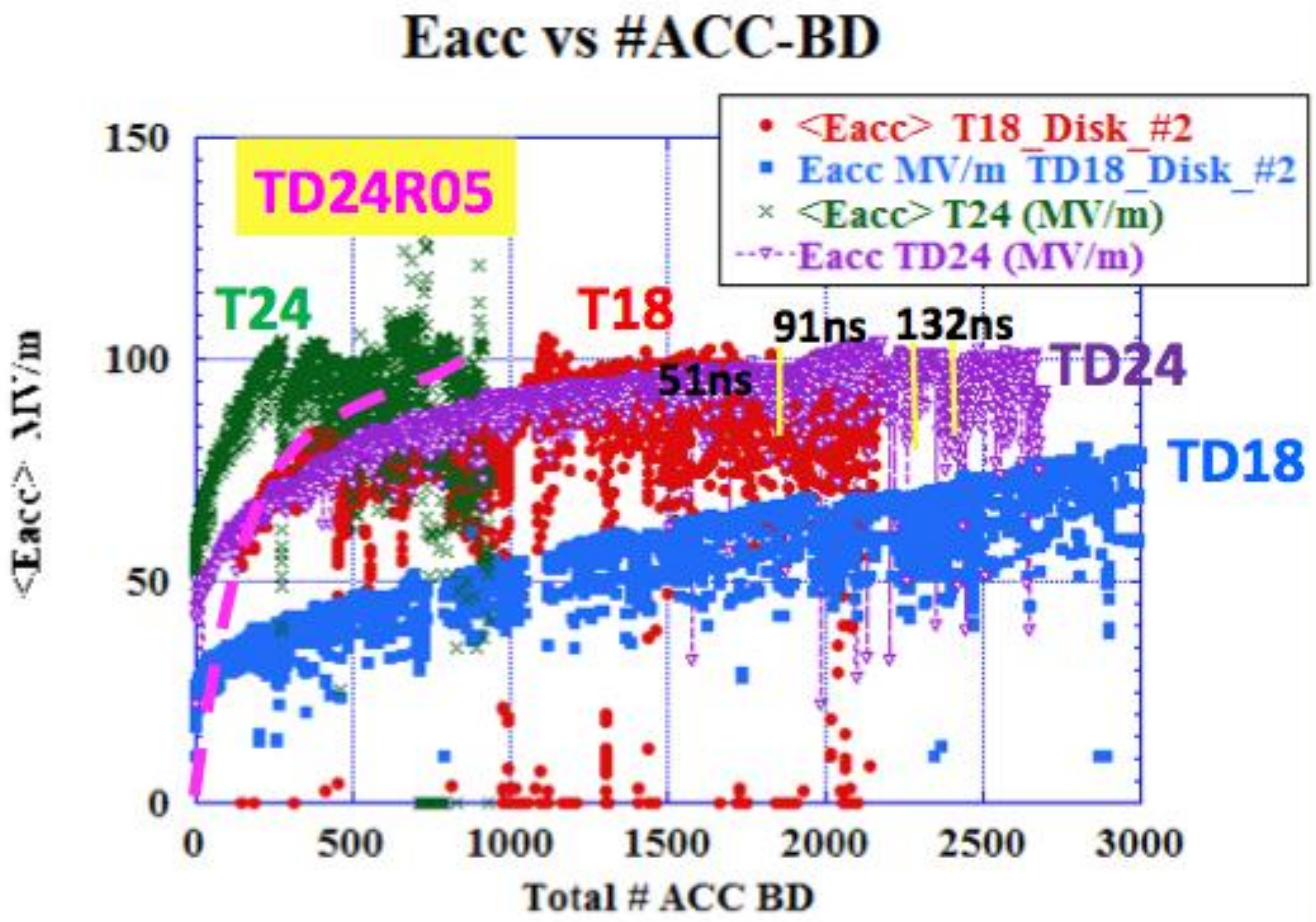
Cavity session:

(1)Recent High gradient test result at KEK	**Toshiyasu Higo(KEK)**
(2)Recent High-gradient test result at CERN	**Jan Kovermann(CERN)**
(3)Seamless ILC cavity fabrication	**John Buttles(BTM)**

Field emission session:

(1)Field emission mapping measurement	**Yasuo Higashi(KEK)**
(2)Field emission and SEM surface mapping in Uppsala	**Tomoko Muranaka(CERN)**
(3)Short review of recent Mevarc Workshop	**Walter Wuensch(CERN)**
(4)Localization of field emitter in a 9-cell cavity	**Rongli Geng(JLAB)**
(5)Recent surface study in KEK-STF	**Hitoshi Hayano(KEK)**

Difference in processing speed among four+1 structures



Number if ACC-BD's until reaching the same level in (Tp, Eacc)

Ranking

→T24
→TD24R05?
→T18
→TD24
→TD18

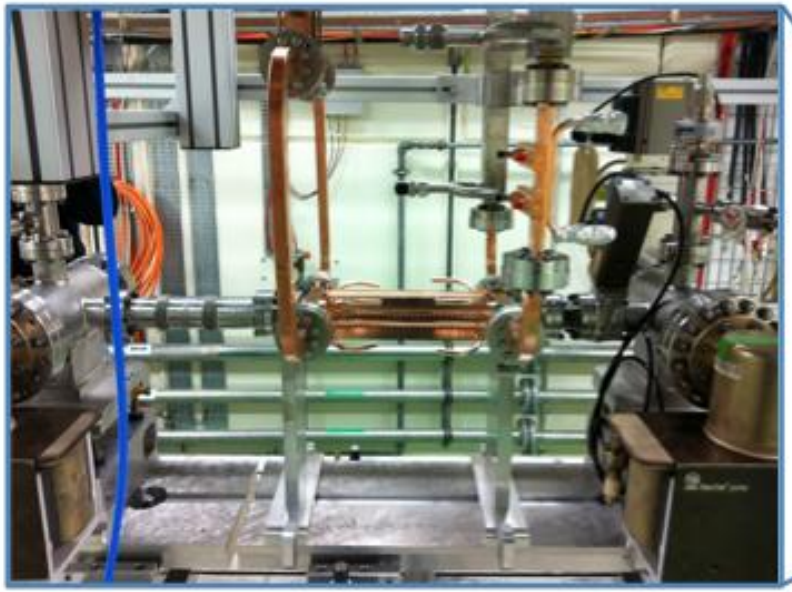
Magnetic field!?!?

T. Higo

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

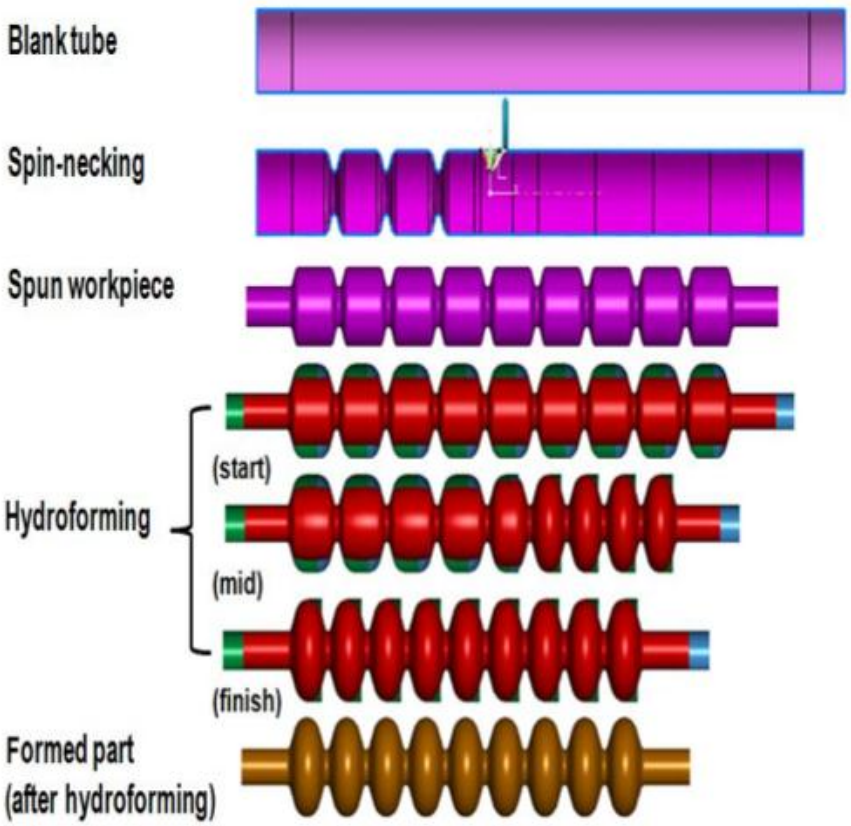
Clockwise from top-left:

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



J. Kovermann

3. ILC 9-cell BTM Forming Process



SRF Cavity: ILC 9-cell

Process: high-volume production

Blank: seamless tube (~Dia.150mm)

⇩

Spin-necking (preform)

⇩

Tube hydroforming (expansion)

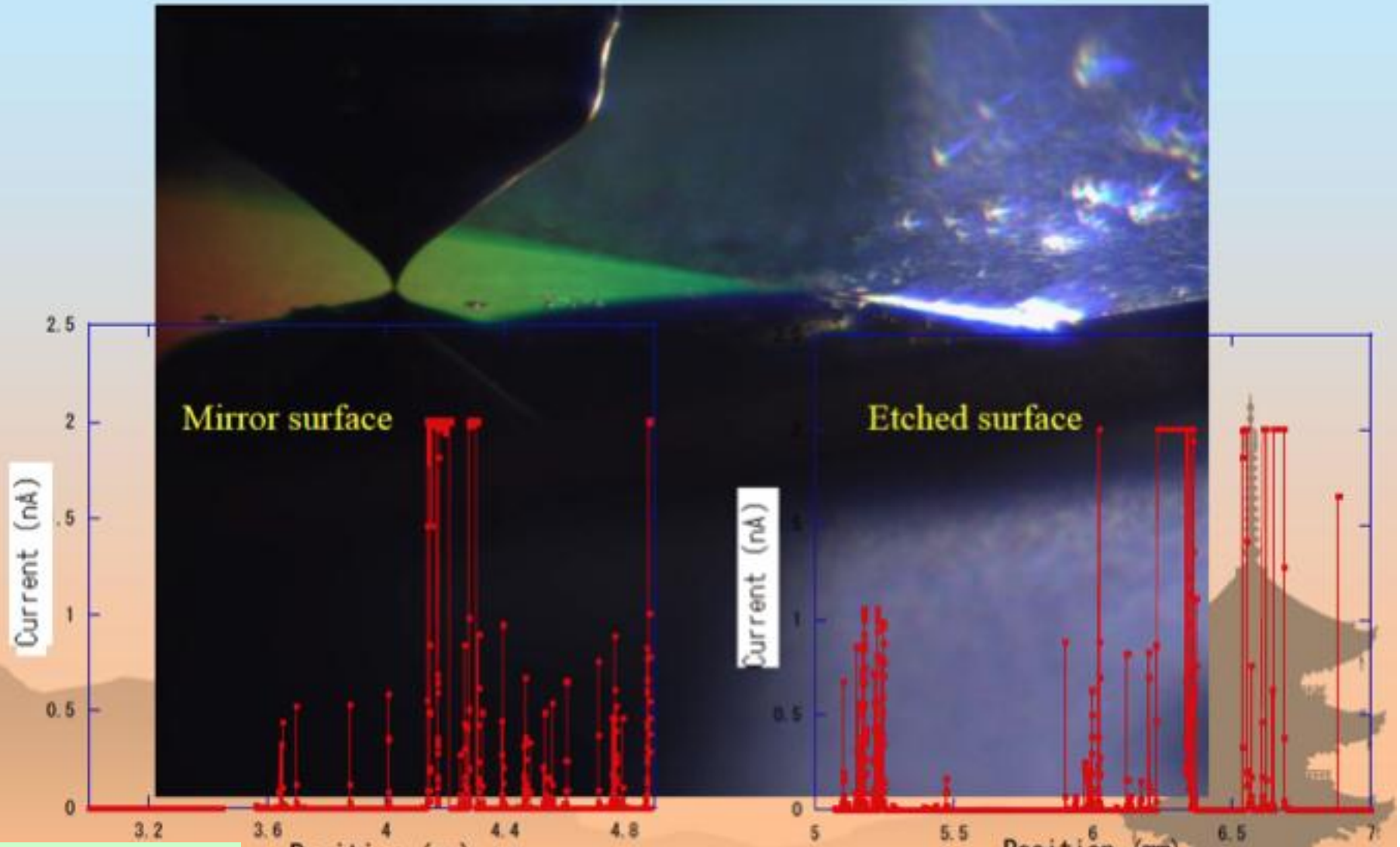
⇩

[**Calibration** (hydroforming 2)]

Challenges: complicated spin-necking FEA process modeling.

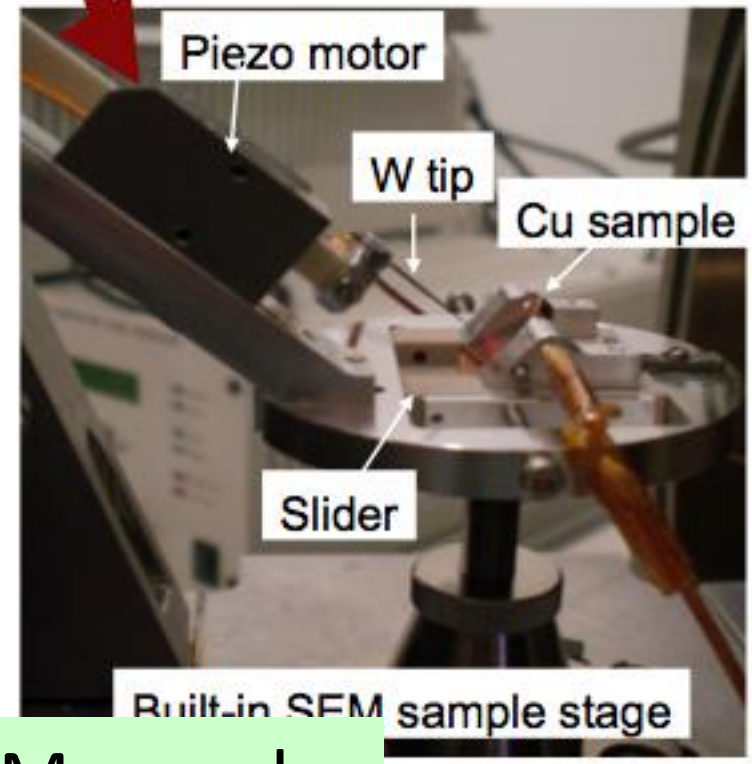
J. Buttles

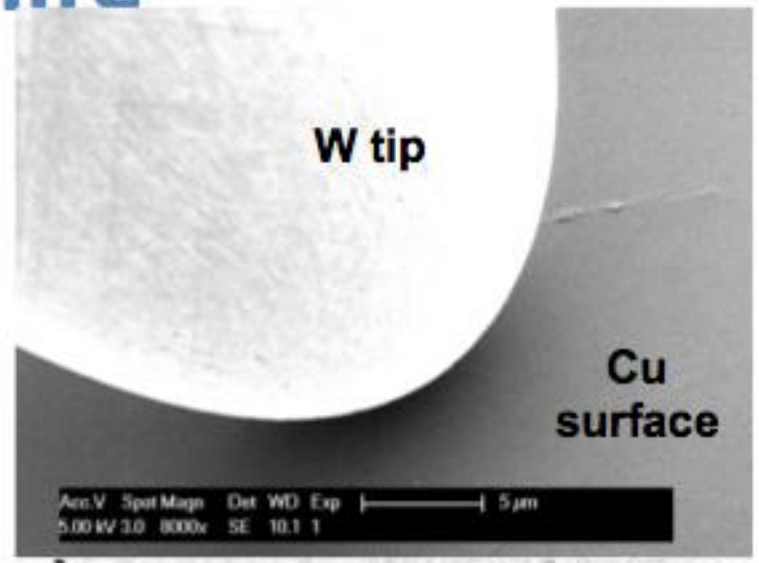
Measured field emission distributions

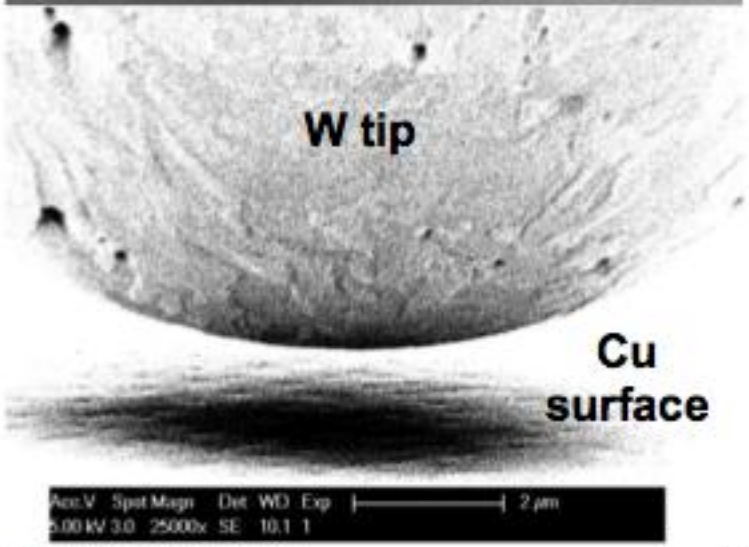


Y. Higashi

Real life







T. Muranaka

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

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

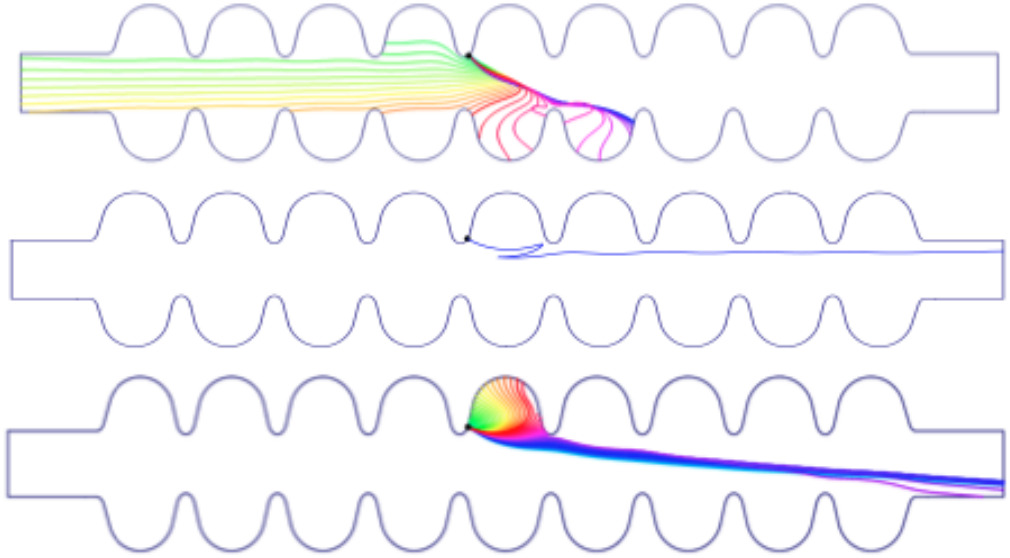
Organizers:

- Matt Hopkins (mmhopki@sandia.gov), Sandia National Laboratories, USA
- Flyura Djurabekova (flyura.djurabekova@helsinki.fi), University of Helsinki, Finland
- Walter Wuensch (walter.wuensch@cern.ch), CERN, Switzerland
- André 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

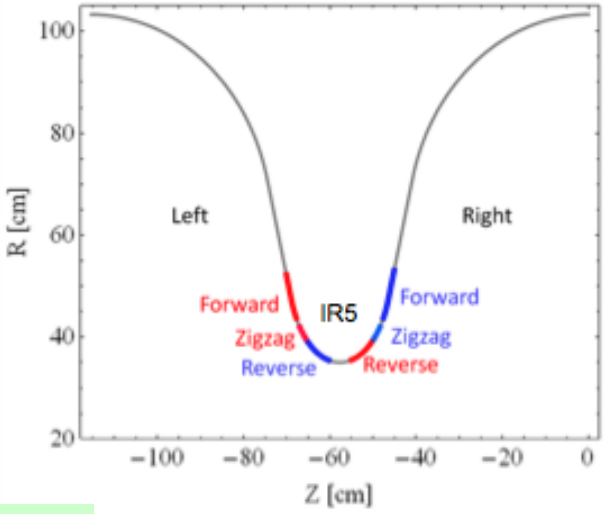
3 Types of "Long Range" Trajectories

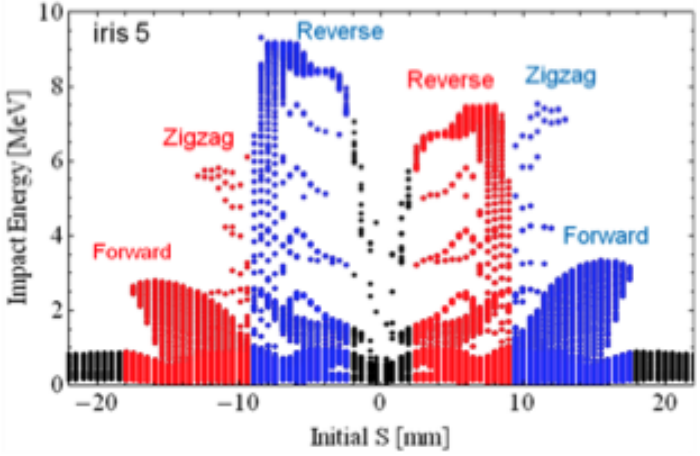


Emission in region
>>> "Reverse type"

Emission in region
>>> "Zigzag type"

Emission in region
>>> "Forward type"





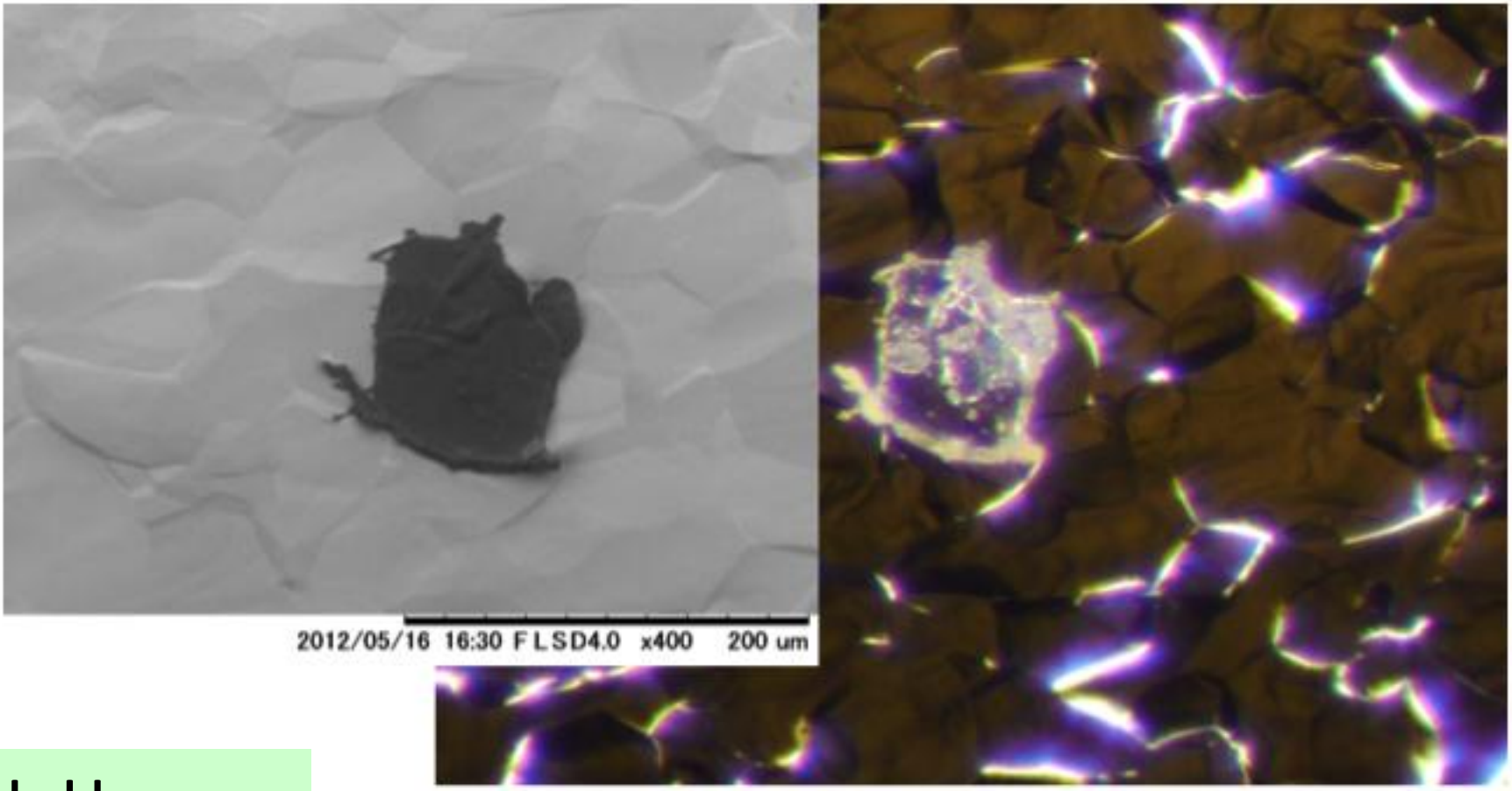
Impact position VS impact energy distribution

R. Geng

Found contamination on BCP treated Nb surface

SEM image
(black)

Optical Microscope image
(shiny)



H. Hayano

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