

Cavity Inspection Results

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Outline



- Motivation
- Instrumentation
- Some pictures
- Plans

Motivation

- Breakdown limits the gradient of the cavity
- Leaves traces – surface damage
- We want to study that damage to understand more
- We need tools to inspect the surface

Portable Inspection Cabinet



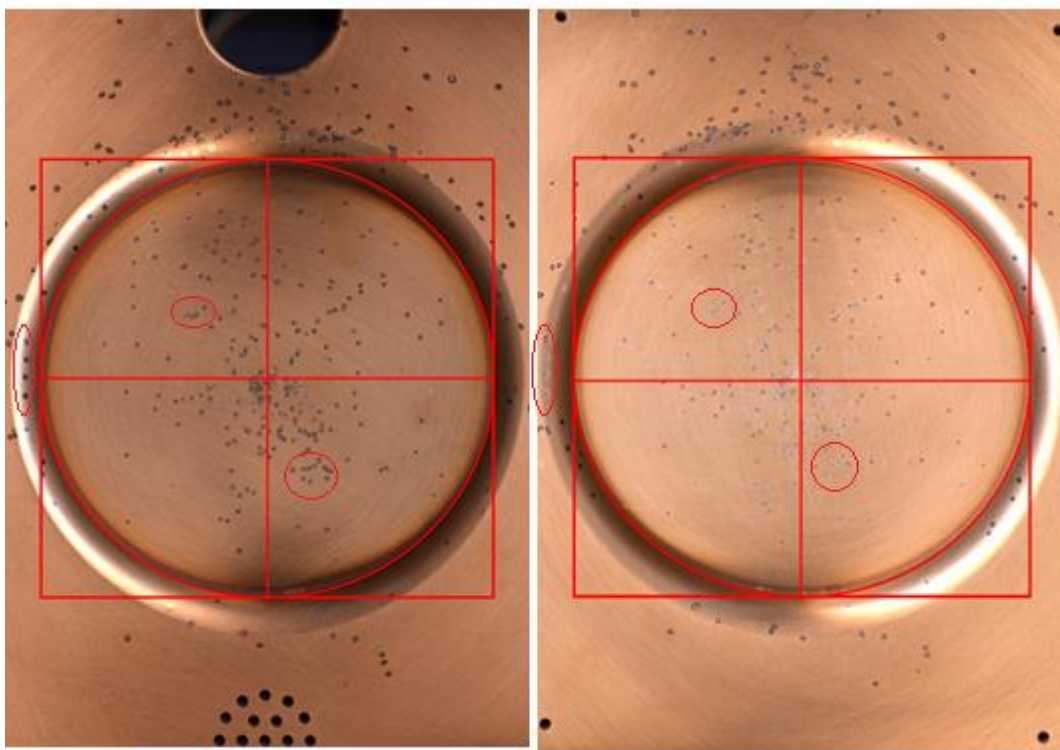
Cabinet is designed to operate in a portable clean room.



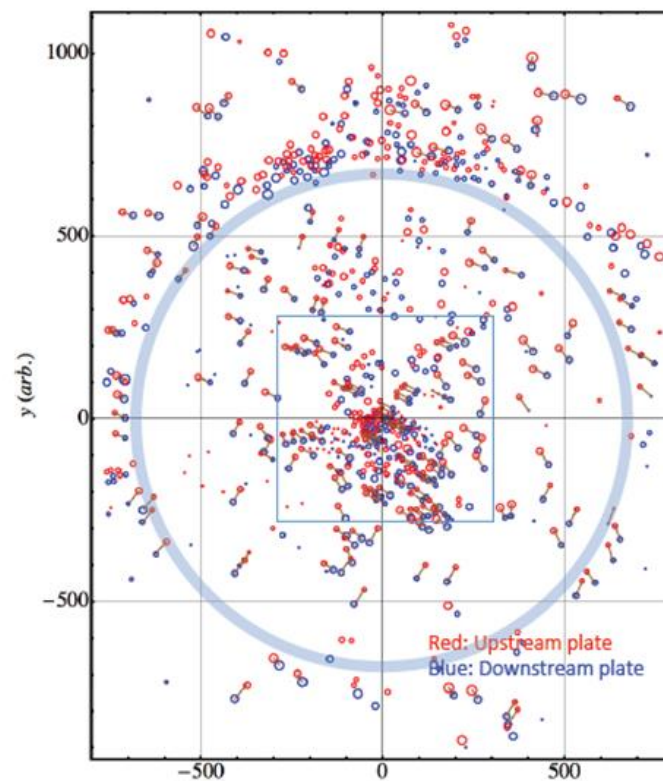
VHX – 100K Microscope

All Seasons Cavity End Walls

Scanned image of two end plates



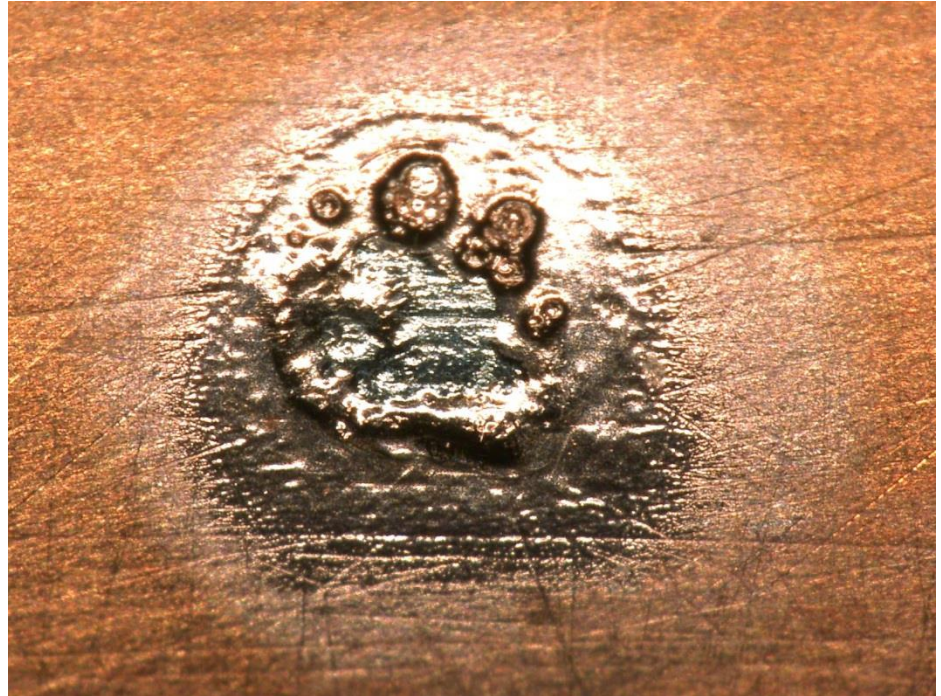
Digital map



Pits close-up

What we can observe:

- Melted copper
- Surface roughness
- Traces of polishing



1.6 x 1.2 mm

Cavity surface - stainless steel plated with copper

Surface inspection

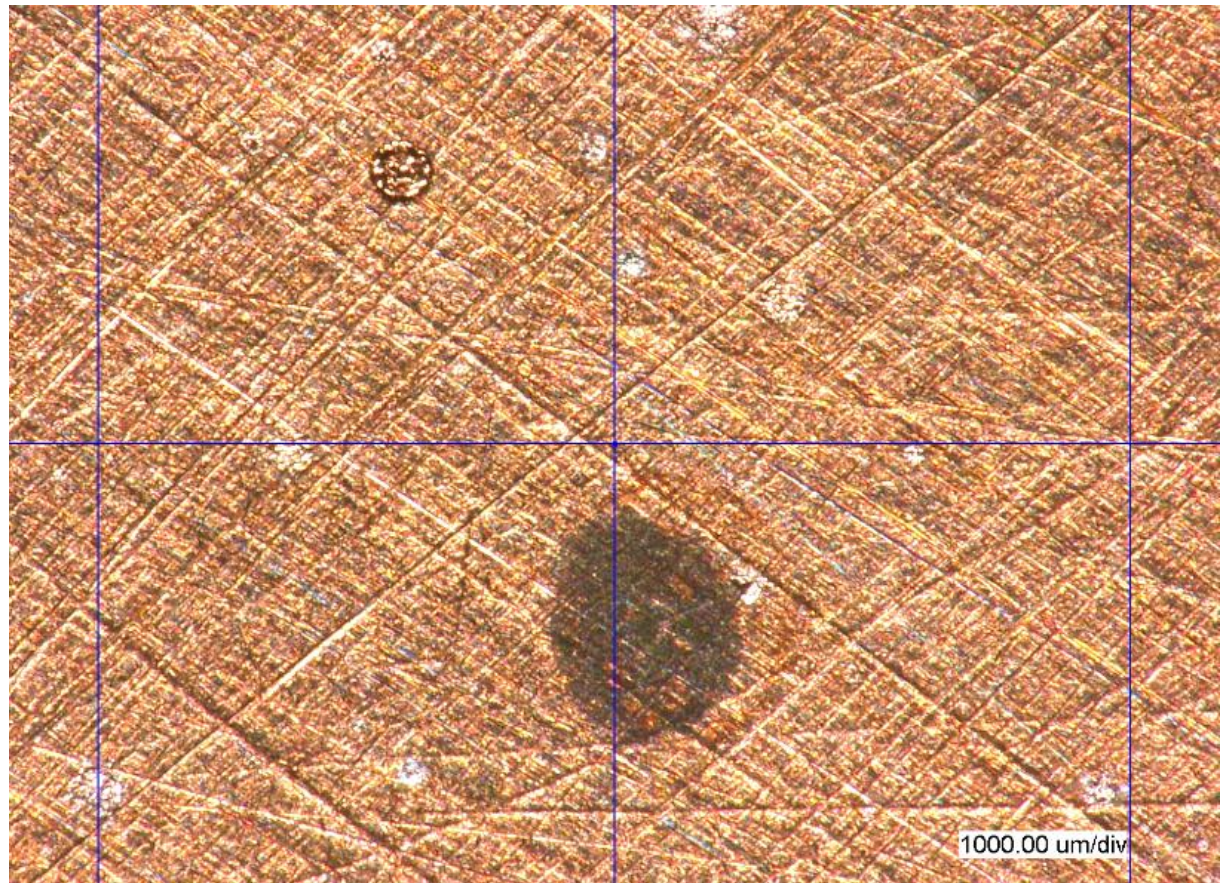
Breakdown pit?

Dark current
bombardment site?

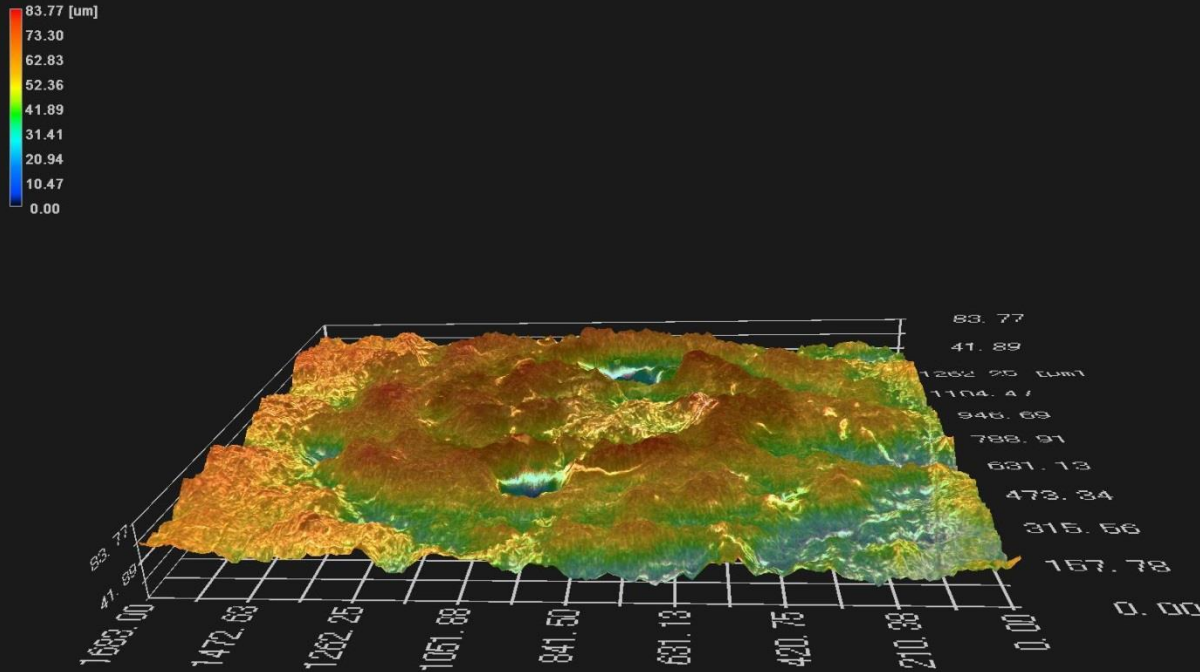
Melted copper
splashes?

Chemical traces?

Asteroid landing
location?



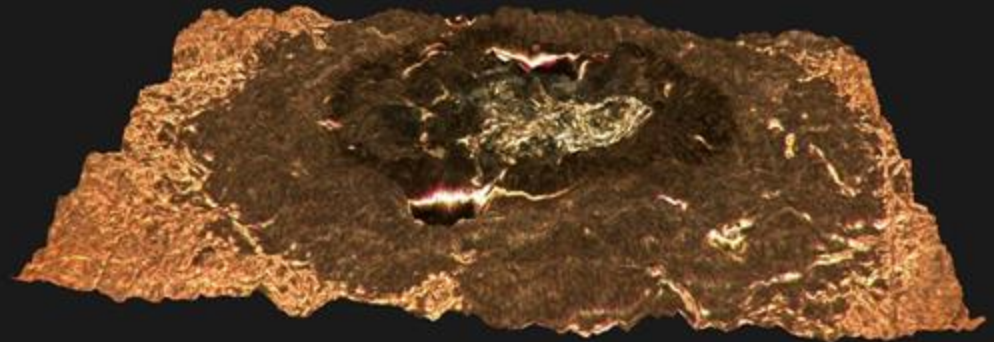
3D imaging



Crude tool to
 estimate deposited
 energy

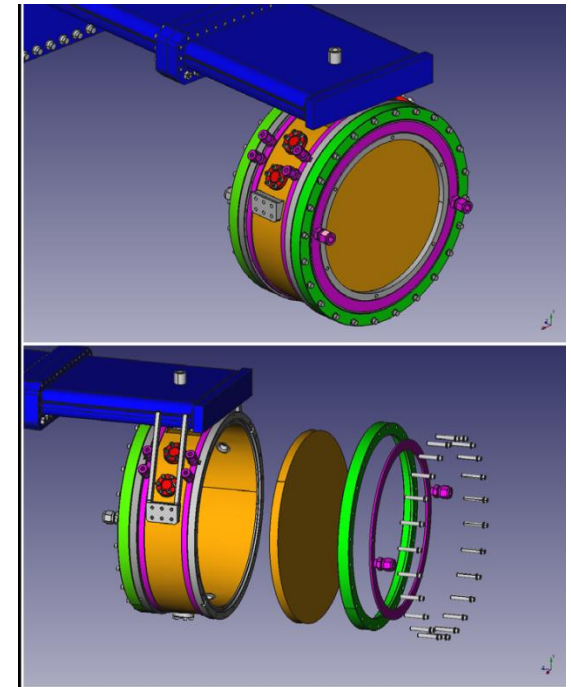
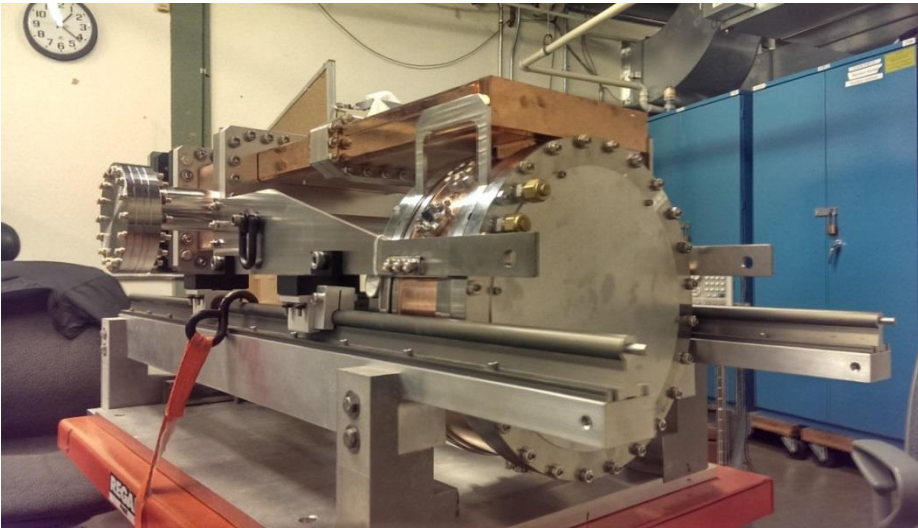
Roughening the
 surface for
 future sparks

Depth From Defocus
 (D.F.D.) to construct 3d
 model



Plans

- Modular cavity program
- Designed to be frequently disassembled and inspected



Conclusion



- We have portable inspection setup suitable for clean room operations
- We hope to understand more about breakdown physics
- Modular Cavity program

Obligatory comic slide

