



Some SCRF Highlights from Europe

Lutz Lilje
DESY



Disclaimer

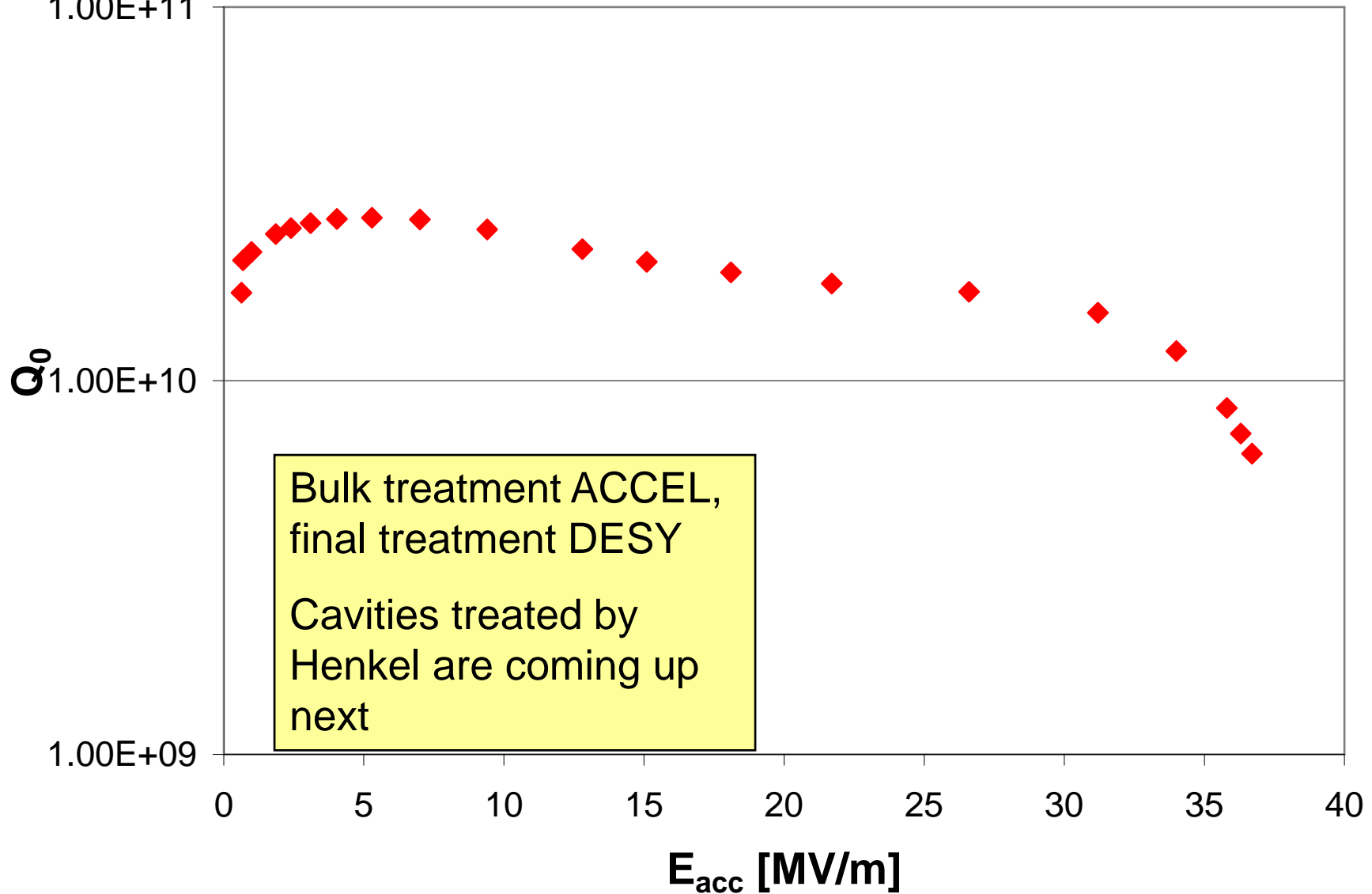
- Highlights except for
 - **XFEL Linac**
 - Setting up a cold linac collaboration
 - Distribution of workload, knowledge, money... amongst several partners
 - **Module 'Crash' Tests**
 - Demonstrate compliance with high pressure vessel codes etc.
 - Understand recovery options
 - Ongoing
 - could try to summarize for Wednesday
 - **Nine-cell 'standard' results**
 - later today



Overview

- Industrial EP
 - **Two companies wanted to set up infrastructure**
 - ACCEL and Henkel
 - Henkel has done already many single-cells
 - Horizontal systems
 - **First tests on rough EP process**
 - After EP rinse cavity with water
 - Mount transport flanges
 - Transport with water to DESY
 - Furnace treatment etc.
- Niobium vendor qualification
 - **Plansee is qualified**
- Large-grain material
 - **Electropolished nine-cell shows very good results**
- Fast Argon baking
 - **Very good results at Saclay**
 - **Confirmed with simpler setup at DESY**

XFEL Industry EP on Multi-cells



Status: Plansee Nb

Three cavities fabricated in-house of Heraeus/Plansee Nb with **RRR ~ 300**

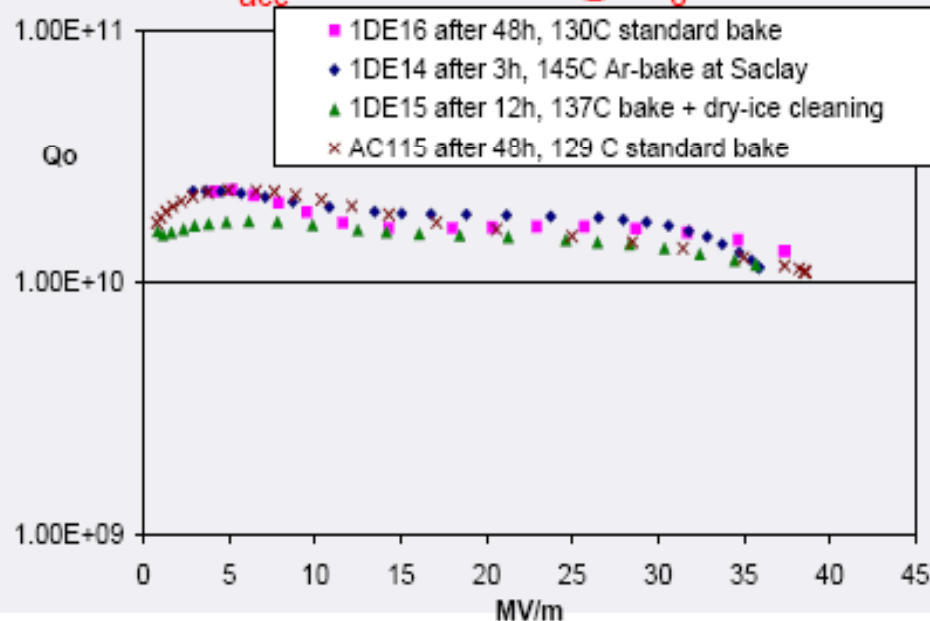
Preparation: >80µm BCP, 800C firing, 100µm EP, HPR, (bake, HPR)

1DE14 after bake: bake under **Ar-atmosphere 145C/ 3h at Saclay =>**

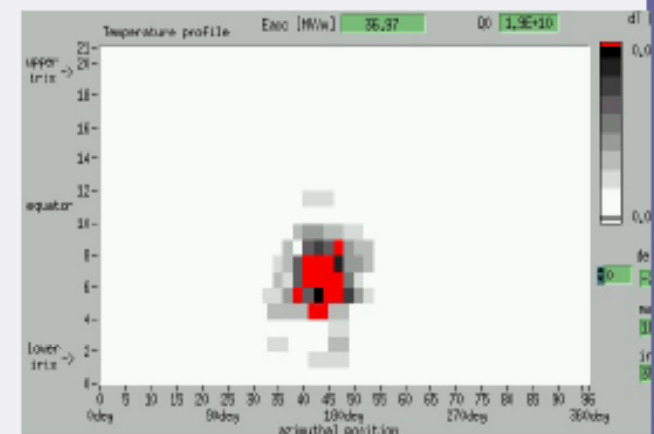
$E_{acc} = 35,9 \text{ MV/m} @ Q_0 = 1,1 \cdot 10^{10}$; lim. by BD, few FE (>31/-)

1DE15 after bake: $E_{acc} = 35,7 \text{ MV/m} @ Q_0 = 1,2 \cdot 10^{10}$; lim. by BD; **no FE; dry-ice clean**

1DE16 after bake: $E_{acc} = 37,4 \text{ MV/m} @ Q_0 = 1,3 \cdot 10^{10}$; lim. by BD; **no FE**



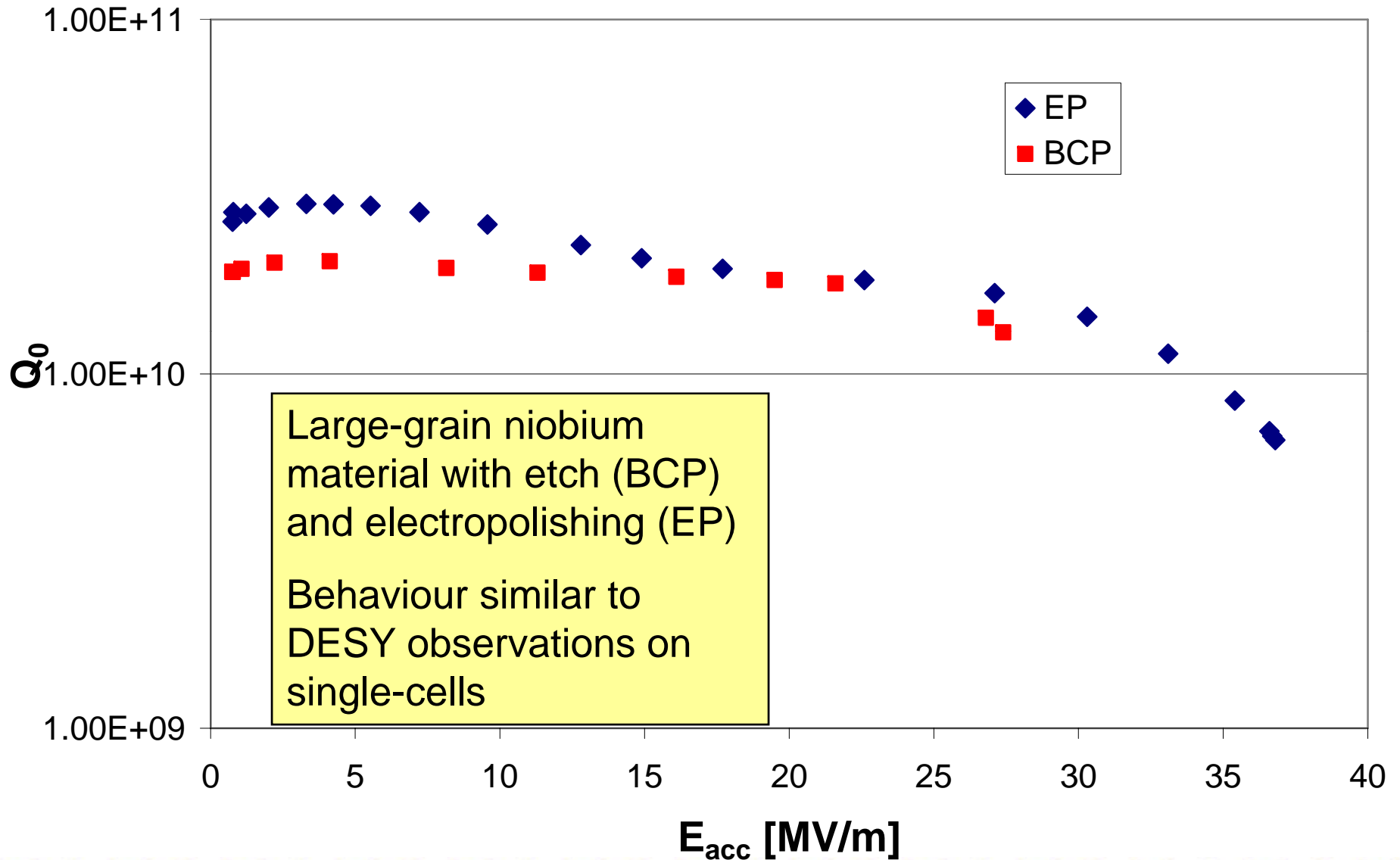
Q(E)-curves of 1DE14 - 1DE16 + AC115 at 2K after bake



T-map of 1DE16 after bake



XFEL: Large Grain Multi-cell with EP

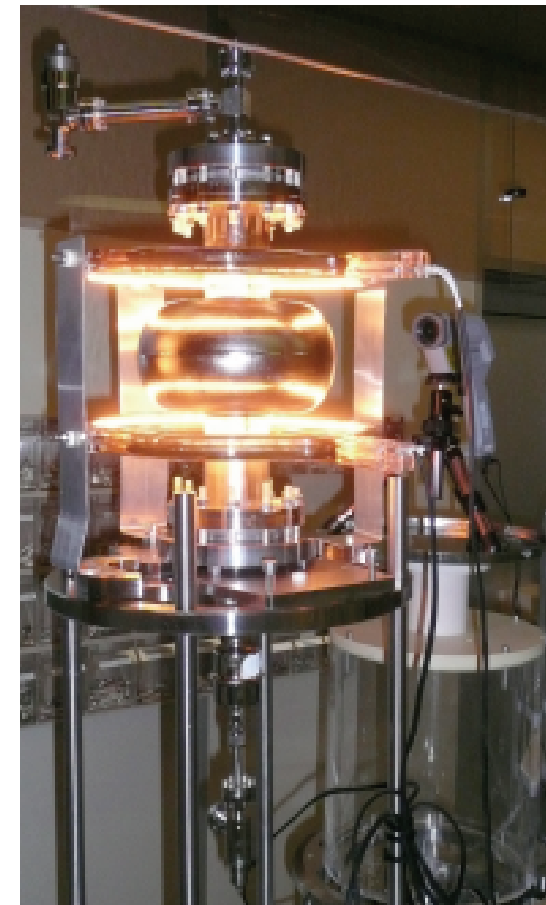
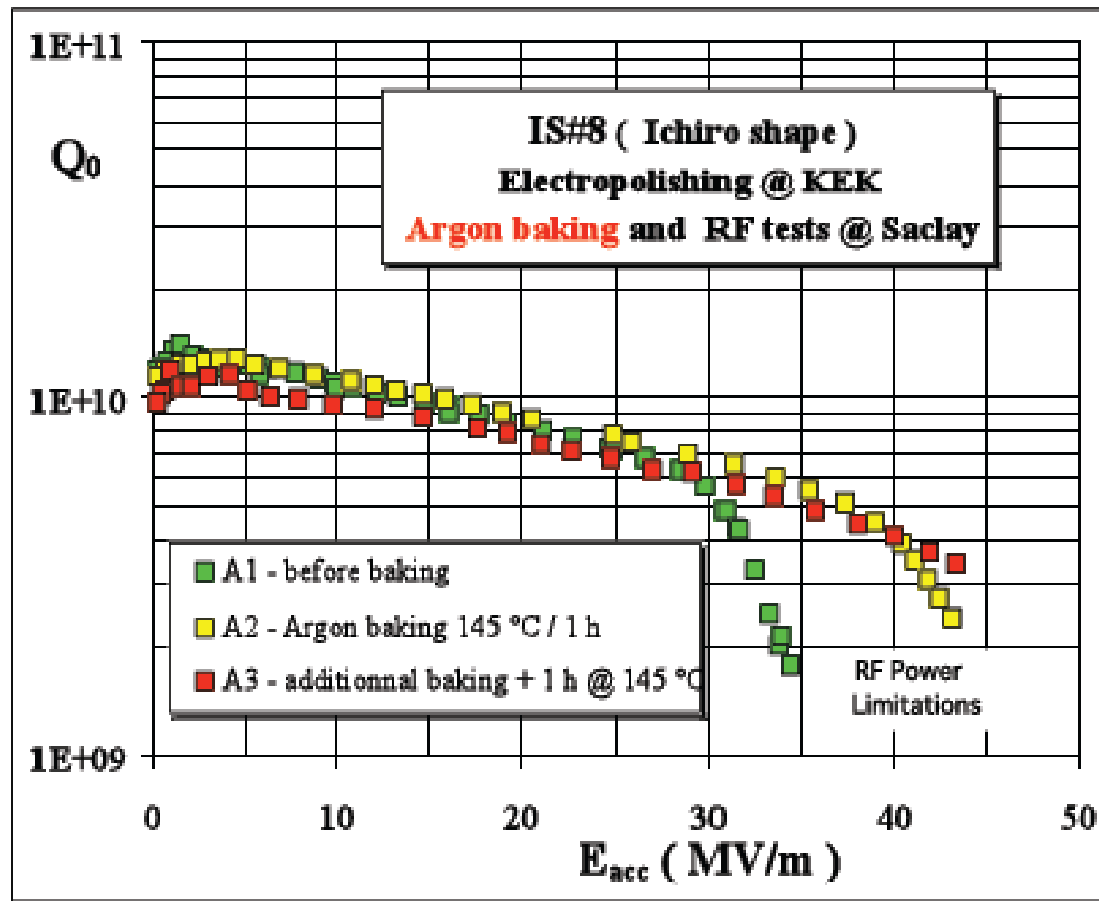


Argon Baking @ 145 °C vs. time

Electropolishing at KEK



Argon baking and RF tests at Saclay



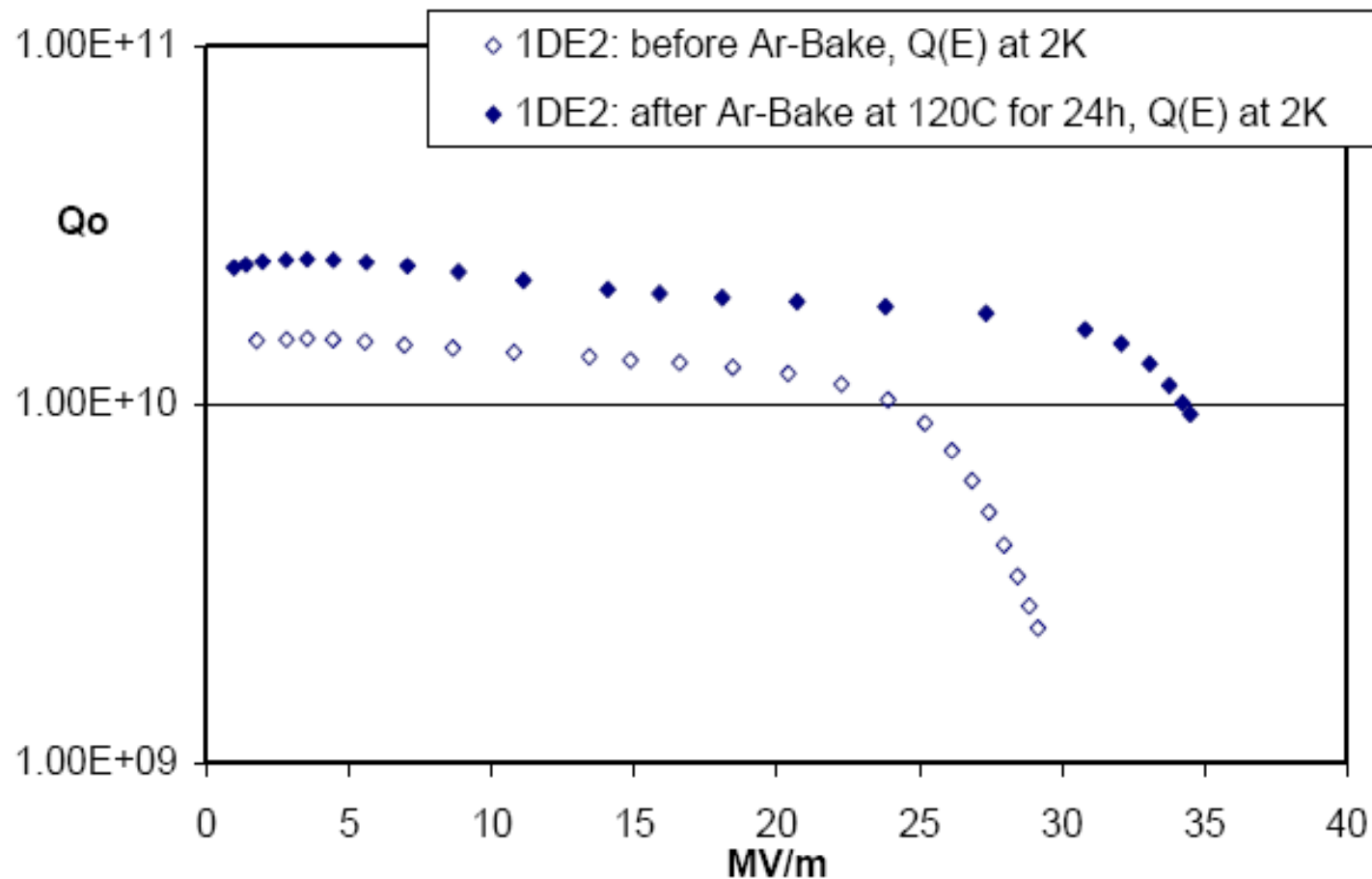
ICHIRO IS#8

Open Bake in Ar-atmosphere: set-up



1DE2: Open Bake in Ar-atmosphere

- Goal: Realize simple 120C-bake procedure for open cavity
(cavity not assembled; no cavity vacuum necessary)





Summary

- Cavity work outside the ,standard‘ processing is still ongoing
- Qualification of vendors
 - **Plansee**
- Training of companies
 - **EP process**
- Cost reduction
 - **e.g. simplifying procedures like fast Argon bake**
- Alternatives for ILC
 - **Large-grain niobium is very attractive**