

Single Crystal Niobium Technology Workshop
CBMM Brazil
October 30 — November 1, 2006

October 30, 2006

9:00 a.m. Tour of CBMM

October 31, 2006

Basics of Single Crystal Technology

Chair: Tadeu Carneiro

- 8:00-8:45 a.m. Overview of ILC C. Pagani
(Proposed ILC configuration, schedule, costs, issues, potential usefulness of single crystal Nb)
- 8:45-9:30 a.m. Physics of Growing Single Crystal Material F. Schoelz
(Thermodynamics, parameters influencing formation, methods, seeding, interaction with walls, impurities, orientation, vacuum requirements, power requirements)
- 9:30–10:15 a.m. Single Crystal Technology in Industry R. Graham
(Industrial processes used to produce single crystal materials such as silicon, nickel super alloy turbine blades, rhenium crystals. Advantages/disadvantages of various systems)
- 10:15-10:40 a.m. **Break**

State of the Art: Reports from Laboratories

Jefferson Lab and Collaborators

Chair: Dieter Proch

- 10:40-11:00 a.m. Physical and Mechanical Properties G. Myneni
11:00-11:20 a.m. Spring Back, Residual Stress, Formability... T. G-Herold/NIST
11:20-11:40 a.m. Interstitial Interactions and Internal Friction R. Ricker/NIST
11:40-12 p.m. Single Crystal Nb of Various Orientations P. Russell/NCSU
12:00-12:30 p.m. Experience in Cavity Fabrication and Testing P. Kneisel
- 12:30–2:00 p.m. **Lunch**

DESY and Collaborators

Chair: Carlo Pagani

- 2:00-2:30 p.m. Large Grain/Single Crystal R&D Program at DESY W. Singer
2:30-2:50 p.m. Experiences in Cavity Fabrication M. Pekeler/Accel
2:50-3:10 p.m. Cavity Testing/Results, Comparison BCP/EP D. Proch

Michigan State University

3:10-3:30 p.m. Activities at MSU C. Compton

3:30-4:00 p.m. [Break](#)

Fermilab and Collaborator

Chair: Robert Rimmer

4:00-4:20 p.m. Activities at FNAL H. Edwards

4:20-4:40 p.m. Studies of Grain Boundaries/Flux Penetration P. Lee/FSU

KEK

4:40-5:00 p.m. Activities at KEK K. Saito

Industrial Capabilities: Reports from Nb Producing Companies

Chair: Ganapati Myneni

5:00-5:15 p.m. CBMM T. Carneiro

5:15-5:30 p.m. H.C. Starck P. Jepson

5:30-5:45 p.m. Tokyo Denkai H. Umezawa

5:45-6:00 p.m. Wah Chang R. Graham

6:00-6:15 p.m. W.C. Heraeus B. Spaniol

This session is meant to give workshop participants an overview of the presently available industrial capacity and plans for the future: output, EBM systems (size of crucibles, power, guns, and vacuum systems), material specifications, and sheet manufacturing capability.

November 1, 2006

8:30-10:30 a.m. Panel Discussion

Panel Members: T. Carneiro, R. Graham, P. Kneisel, D. Proch, F. Schoelz

How Can the Future Be Formed? Discussion Topics for All

What does industry need to develop the technology?
(Funding requirements, facility upgrades? Time frame...)

What is required to demonstrate that single crystal technology is ready to be applied to ILC?

What would be the benefits of using single crystal technology and how would you demonstrate the benefits?
(Costs, reproducibility, performance, streamlined procedures)

10:30-11:00 a.m. Road Map

1:00 p.m. Leave for Sao Paulo