

**Single Crystal Niobium Technology Workshop  
CBMM Brazil October 30 – November 1, 2006  
(Tentative Program)**

**A). Basics of Single Crystal Technology**

- **Overview of ILC** **C. Pagani**  
(Proposed ILC configuration, schedule, costs, issues, potential usefulness of single crystal Nb)
  
- **Physics of Growing Single Crystal Material** **F. Schoelz**  
(Thermodynamics, parameters influencing formation, methods, seeding, interaction with walls, impurities, orientation, vacuum requirements, power requirements)
  
- **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)

**B). State of the Art: Reports from Laboratories**

- **Jefferson Lab and Collaborators**  
  

<b>Physical and Mechanical Properties</b> <b>Spring Back, Residual Stress, Formability...</b> <b>Interstitial Interactions and Internal Friction</b> <b>Single Crystal Nb of Various Orientations</b> <b>Superplastic Forming of Nb Sheets</b> <b>Experience in Cavity Fabrication and Testing</b>	<b>G. Myneni</b> <b>T. G-Herold/NIST</b> <b>R. Ricker/NIST</b> <b>P. Russell/NCSU</b> <b>A. Ghosh/MU</b> <b>P. Kneisel</b>
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- **DESY and Collaborators**  
  

<b>Large Grain/Single Crystal R&amp;D Program at DESY</b> <b>Experiences in Cavity Fabrication</b> <b>Cavity Testing/Results, Comparison BCP/EP</b>	<b>W. Singer</b> <b>M. Pekeler/Accel</b> <b>D. Proch</b>
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- **Cornell University**

**Activities at Cornell**

**H. Padamsee**  
(Not confirmed)

- **Fermilab and Collaborator**

**Activities at FNAL**  
**Studies of Grain Boundaries/Flux Penetration**

**H. Edwards**  
**P. Lee/FSU**

- **KEK**

**Activities at KEK**

**K. Saito**

**C). Industrial Capabilities: Reports from Nb Producing Companies**

**CBMM**  
**Ningxia/Oti**  
**Starck**  
**Tokyo Denkai**  
**Wah Chang**  
**W.C. Heraeus**

**T. Carneiro**  
**TBD**  
**P. Jepsen**  
**H.Umezawa**  
**R. Graham**  
**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 specs, and sheet manufacturing capability.

**D). How Can the Future Be Formed? Discussion Topics for All**

**What are the needs of industry to develop the technology?**  
(Funding requirements, facility upgrades? Time frame...)

**What needs to happen to demonstrate that single crystal technology 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)

**A Road Map**