6th SRF Materials Workshop

Report of Contributions

https://indico.fnal.gov/e/3118

Contribution ID: **0** Type: **not specified**

Heat treatment and passivation of SRF Nb cavities

Thursday, 18 February 2010 09:10 (10 minutes)

Presenter: , Ciovati (JLab)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **1** Type: **not specified**

Materials issues from FNAL/ANL 1.3 GHz processing experience and consideration of Project X at 650 MHz

Thursday, 18 February 2010 08:40 (20 minutes)

Presenter: , Cooley (FNAL)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **2** Type: **not specified**

Can we predict performance of 650 MHz cavities?

Thursday, 18 February 2010 09:00 (10 minutes)

Presenter: , Sergatskov (FNAL)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **3** Type: **not specified**

Locating Quenches With Second Sound

Thursday, 18 February 2010 09:40 (10 minutes)

Presenter: , Liepe (Cornell)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **4** Type: **not specified**

Discussion

Thursday, 18 February 2010 09:50 (20 minutes)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **5** Type: **not specified**

Search for pit formation mechanisms – weld coupon electropolishing

Thursday, 18 February 2010 10:30 (10 minutes)

Presenter: , Cooley (FNAL)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **6** Type: **not specified**

Recent developments in understanding the mild baking effect

Thursday, 18 February 2010 10:40 (20 minutes)

Presenter: , Romanenko (FNAL)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **27** Type: **not specified**

Light vs. heavy electropolishing

Friday, 19 February 2010 08:35 (10 minutes)

Presenter: , Reece (JLab)

Session Classification: Session 5: Final processing, coating, repair

Contribution ID: **46** Type: **not specified**

Opening remarks and workshop guidelines

Thursday, 18 February 2010 08:30 (10 minutes)

Presenter: , Cooley (FNAL)

Contribution ID: **47** Type: **not specified**

Laser heating investigation of SRF cavities

Thursday, 18 February 2010 09:20 (10 minutes)

Presenter: , Ciovati (JLab)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **48** Type: **not specified**

Migration of quench location

Thursday, 18 February 2010 09:30 (10 minutes)

Presenter: , Sergatskov (FNAL)

Session Classification: Session 1: Recent cavity results and drivers

Contribution ID: **49** Type: **not specified**

Effect of Low T baking on field emission and Nb surface oxide layer structure

Thursday, 18 February 2010 11:00 (10 minutes)

Presenter: , Wu (JLab)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **50** Type: **not specified**

Annealing Temperature and Thermal Conductivity of Superconducting Niobium

Thursday, 18 February 2010 11:10 (10 minutes)

Presenter: , Wright (MSU)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **51** Type: **not specified**

Further evidence for localized magnetic moments in the surface oxides of air-exposed niobium

Thursday, 18 February 2010 11:20 (10 minutes)

Presenter: , Zasadzinski (IIT)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **52** Type: **not specified**

Evidence for suppressed superconductivity across buffer chemically polished grain boundaries of SRF quality niobium

Thursday, 18 February 2010 11:40 (20 minutes)

Presenter: , Sung (FSU)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **53** Type: **not specified**

Discussion

Thursday, 18 February 2010 12:00 (20 minutes)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **54** Type: **not specified**

Effects of materials defects on the physics of SRF

Thursday, 18 February 2010 13:40 (20 minutes)

Presenter: , Gurevich (FSU)

Session Classification: Session 3: Ideal limits to SRF

Contribution ID: **55** Type: **not specified**

Superheating field of niobium

Thursday, 18 February 2010 14:00 (20 minutes)

Presenter: , Liepe (Cornell)

Session Classification: Session 3: Ideal limits to SRF

Contribution ID: **56** Type: **not specified**

Vortex dissipation as an origin of Q-slope and quench

Thursday, 18 February 2010 14:20 (20 minutes)

Presenter: , Dzyuba (FNAL)

Session Classification: Session 3: Ideal limits to SRF

Contribution ID: **57** Type: **not specified**

Discussion

Thursday, 18 February 2010 14:40 (20 minutes)

Session Classification: Session 3: Ideal limits to SRF

Contribution ID: **58** Type: **not specified**

Basic mechanisms of electropolishing

Thursday, 18 February 2010 15:00 (20 minutes)

Presenter: , Reece (for Tian, JLab)

Session Classification: Session 4: Surface processing — bulk removal

Contribution ID: **59** Type: **not specified**

Development of computational algorithms to predict surface morphology and evolution during electropolishing

Thursday, 18 February 2010 15:20 (10 minutes)

Presenter: , Brankovic (Houston)

Session Classification: Session 4: Surface processing — bulk removal

Contribution ID: **60** Type: **not specified**

Integrated Cavity Processing at JLab

Thursday, 18 February 2010 15:50 (10 minutes)

Presenter: , Reece (JLab)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **61** Type: **not specified**

FNAL Integrated Cavity Processing Apparatus for single-cell R&D

Thursday, 18 February 2010 16:10 (10 minutes)

Presenter: , Cooper (FNAL)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **62** Type: **not specified**

Industrialization of vertical electropolishing

Thursday, 18 February 2010 16:20 (20 minutes)

Presenter: , Conway (Cornell)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **63** Type: **not specified**

VEP at JLab

Thursday, 18 February 2010 16:40 (10 minutes)

Presenter: , Reece (JLab)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **64** Type: **not specified**

The need for tumbling and recent tumbling results at FNAL

Thursday, 18 February 2010 16:50 (10 minutes)

Presenter: , Cooper (FNAL)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **65** Type: **not specified**

Fluoride-free electropolishing of niobium cavities for next-generation particle accelerators

Thursday, 18 February 2010 17:00 (10 minutes)

Presenter: , Zhao (Va. Tech)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **66** Type: **not specified**

Processing Effects and Use of Electrochemical Abrasive Jet Polishing for Nb-SRF Cavities

Thursday, 18 February 2010 17:10 (10 minutes)

Presenter: , Muftu (Northeastern)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **67** Type: **not specified**

Discussion

Thursday, 18 February 2010 17:30 (20 minutes)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **68** Type: **not specified**

Opening remarks

Friday, 19 February 2010 08:30 (5 minutes)

Presenter: , Cooley (FNAL)

Contribution ID: **69** Type: **not specified**

Restoration of maximum gradient by laser re-melting a cavity pit

Friday, 19 February 2010 08:45 (20 minutes)

Presenter: , Ge (FNAL)

Session Classification: Session 5: Final processing, coating, repair

Contribution ID: **70** Type: **not specified**

Capabilities and design philosophy of a dual resolution inspection and repair system for SRF cavities

Friday, 19 February 2010 09:05 (10 minutes)

Presenter: , Bearden (MicroDynamics)

Session Classification: Session 5: Final processing, coating, repair

Contribution ID: **71** Type: **not specified**

Surface Treatment of Niobium SRF Cavity by Plasma Etching

Friday, 19 February 2010 09:15 (10 minutes)

Presenter: , Upadhyay (ODU)

Session Classification: Session 5: Final processing, coating, repair

Contribution ID: **72** Type: **not specified**

Progress in niobium coatings by PE-ALD

Friday, 19 February 2010 09:25 (10 minutes)

Presenter: , Prolier (ANL)

Session Classification: Session 5: Final processing, coating, repair

Contribution ID: **73** Type: **not specified**

Discussion

Friday, 19 February 2010 09:35 (15 minutes)

Session Classification: Session 5: Final processing, coating, repair

Contribution ID: **74** Type: **not specified**

TE Cavity work

Friday, 19 February 2010 10:10 (10 minutes)

Presenter: , Liepe (Cornell)

Session Classification: Session 6: Q(E) and Rs measurements

Contribution ID: **75** Type: **not specified**

Current Status of Dielectric Test Cavity and Wafer Test Cavity

Friday, 19 February 2010 10:20 (10 minutes)

Presenter: , Pogue (TAMU)

Session Classification: Session 6: Q(E) and Rs measurements

Contribution ID: **76** Type: **not specified**

RF Critical Magnetic Field Measurements of Nb/(Insulator)/MgB2 Systems

Friday, 19 February 2010 10:30 (10 minutes)

Presenter: , Tajima (LANL)

Session Classification: Session 6: Q(E) and Rs measurements

Contribution ID: **77** Type: **not specified**

Local measurements of the electron mean free path

Friday, 19 February 2010 10:40 (10 minutes)

Presenter: , Phillips (JLab)

Session Classification: Session 6: Q(E) and Rs measurements

Contribution ID: **78** Type: **not specified**

Progress in near-field microwave microscopy of superconducting materials

Friday, 19 February 2010 10:50 (10 minutes)

Presenter: , Anlage (Maryland)

Session Classification: Session 6: Q(E) and Rs measurements

Contribution ID: **79** Type: **not specified**

Discussion

Friday, 19 February 2010 11:00 (20 minutes)

Session Classification: Session 6: Q(E) and Rs measurements

Contribution ID: **80** Type: **not specified**

Plans for improving stockpile and cost of fine-grained niobium and chipless forming of ingot niobium into cavity subassemblies

Friday, 19 February 2010 11:20 (10 minutes)

Presenter: , Grimm (Niowave)

Session Classification: Session 7: Forming and Welding

Contribution ID: **81** Type: **not specified**

Direct and indirect process feedbacks for the fabrication of 1.3 GHz elliptical SRF resonators to improve production yields

Friday, 19 February 2010 11:30 (10 minutes)

Presenter: , Edinger (Pavac)

Session Classification: Session 7: Forming and Welding

Contribution ID: **82** Type: **not specified**

Dislocations in niobium

Friday, 19 February 2010 11:40 (20 minutes)

Presenter: , Baars (MSU)

Session Classification: Session 7: Forming and Welding

Contribution ID: **83** Type: **not specified**

Homogenization of Nb microstructures

Friday, 19 February 2010 12:00 (10 minutes)

Presenter: , Balachandran (TAMU)

Session Classification: Session 7: Forming and Welding

Contribution ID: **84** Type: **not specified**

Cryotesting of niobium polycrystals

Friday, 19 February 2010 13:30 (10 minutes)

Presenter: , Bieler (MSU)

Session Classification: Session 7: Forming and Welding (cont.)

Contribution ID: **85** Type: **not specified**

Fabrication of ILC cavities from axisymmetric RRR Nb tubes

Friday, 19 February 2010 13:40 (10 minutes)

Presenter: , Crooks (Black Laboratories)

Session Classification: Session 7: Forming and Welding (cont.)

Contribution ID: **86** Type: **not specified**

Discussion

Friday, 19 February 2010 13:50 (10 minutes)

Session Classification: Session 7: Forming and Welding (cont.)

Contribution ID: **87** Type: **not specified**

Update on MgB2 deposition for SRF cavities

Friday, 19 February 2010 14:00 (10 minutes)

Presenter: , Xi (Temple)

Session Classification: Session 8: Alternate Processes

Contribution ID: **88** Type: **not specified**

Coupon and cavity studies of SRF thin films produced by energetic condensation

Friday, 19 February 2010 14:10 (10 minutes)

Presenter: , Krishnan (Alameda Appl. Sci.)

Session Classification: Session 8: Alternate Processes

Contribution ID: **89** Type: **not specified**

Discussion

Friday, 19 February 2010 14:20 (10 minutes)

Session Classification: Session 8: Alternate Processes

Contribution ID: **90** Type: **not specified**

Opening remarks

Saturday, 20 February 2010 08:30 (10 minutes)

Presenter: , Cooley (FNAL)

Contribution ID: **91** Type: **not specified**

Session 1 Summary

Saturday, 20 February 2010 08:40 (20 minutes)

What are the primary materials R&D drivers from cavities and programs?

Contribution ID: **92** Type: **not specified**

Session 2 Summary

Saturday, 20 February 2010 09:00 (20 minutes)

What are small-scale experiments telling us about how to proceed (or not proceed)?

Contribution ID: **93** Type: **not specified**

Session 3 Summary

Saturday, 20 February 2010 09:20 (20 minutes)

What is the ideal surface? What ideas or models are most useful and immediately applicable?

Contribution ID: **94** Type: **not specified**

Session 4 Summary

Saturday, 20 February 2010 09:40 (20 minutes)

Can we obtain the target surface reliably and reproducibly? What is optimum, and what needs improvement?

Contribution ID: **95** Type: **not specified**

Session 5 Summary

Saturday, 20 February 2010 10:10 (20 minutes)

What are the important differences in the final surface structures in relation to the observed properties? What changes need to be made, and what new things should be tried?

Contribution ID: **96** Type: **not specified**

Session 6 Summary

Saturday, 20 February 2010 10:30 (20 minutes)

What techniques are useful and immediately applicable? Can property measurements bridge between coupons and cavities?

Contribution ID: **97** Type: **not specified**

Session 7 Summary

Saturday, 20 February 2010 10:50 (20 minutes)

Do forming and welding produce downstream difficulties? What needs to be changes?

Contribution ID: **98** Type: **not specified**

Session 8 Summary

Saturday, 20 February 2010 11:10 (20 minutes)

Can coating technologies provide a meaningful impact and in a reasonable time frame?

Contribution ID: **99** Type: **not specified**

Final discussion

Saturday, 20 February 2010 11:30 (30 minutes)

Contribution ID: **100** Type: **not specified**

Fundamental Surface Chemistry Studies of Niobium Oxidation

Thursday, 18 February 2010 11:30 (10 minutes)

Presenter: , Nakajima (UChicago)

Session Classification: Session 2: Recent coupon results and drivers

Contribution ID: **101** Type: **not specified**

Faradayic electropolishing

Thursday, 18 February 2010 17:20 (10 minutes)

Presenter: , Inman (Faraday Technology)

Session Classification: Session 4: Surface processing — bulk removal (cont.)

Contribution ID: **102** Type: **not specified**

EP temperature control strategies

Thursday, 18 February 2010 16:00 (10 minutes)

Presenter: , Reece (JLab)

Session Classification: Session 4: Surface processing — bulk removal (cont.)