

**Update on S0 Work
in the Americas Region**
(since Apr 21-25 SCRF meeting at Fermilab)

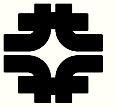
Mark Champion
03 June 2008



- **Completed Americas Region FY08-09 plan that was presented at Fermilab SCRF meeting in April**
 - Discussion focused on making proposed work fit budgetary guidelines
- **AES3 at Los Alamos for testing of temperature-mapping system**
- **Accel7 electro-polished at Argonne May 12**
 - To be tested this week at Jefferson Lab
- **Accel6 at Fermilab (preparation at Jefferson Lab)**
 - First test planned for next week: verify cavity performance, test new cavity pumping system, and retest variable input coupler
- **Two new Accel cavities delivered to Jefferson Lab; third to follow shortly.**
 - Accel12 received bulk EP and degassing; light EP this week.
- **New Accel cavity delivered to Argonne**
 - Discussions this week on how to proceed (HPR, assembly and testing will have to be at Cornell since the facility at Argonne is not yet complete)

- Barrel-polishing machine received and acceptance-tested at Fermilab
- 3.9 GHz electro-polishing system installed at ABLE Electropolishing in Chicago. First process planned for this summer.
- Tensile strength measurements in progress on samples at Fermilab in support of 3.9 GHz cryomodule safety documentation
 - RRR300 material: as received, welded, formed, 800 C heat treatment → preliminary result: measurements agree with published data
- All Nb for next Accel production eddy-current scanned at Fermilab
 - 12 nine-cell cavities; 6 single-cell cavities
- Roark/Niowave collaboration to deliver 6 single-cell 1.3 GHz cavities this month





- **Completion of cavity processing facility at Argonne ongoing**
 - **Critical path is ultrasonic cleaner; due in September**
 - **High-pressure rinsing system to be assembled at Argonne by mid-June**
 - **Clean room modifications, plumbing, gaseous nitrogen, and electronics and interlocks work in progress**



Cavity AES-3 at Los Alamos with T-Map system installed.
Vertical dewar test planned for this week.



Courtesy of Tsuyoshi Tajima



- Accel cavity A7 electro-polished; <removal> ~27 microns.
- Upon completion of low-pressure rinsing, cavity was filled with ultra-pure water and shipped to Jefferson Lab.
- Ultrasonic cleaning, high-pressure rinsing, and assembly complete.
- Testing scheduled for June 4th.



Photos courtesy of Mike Kelly



What happened in S0 cavities at JLab since April SCRF meeting

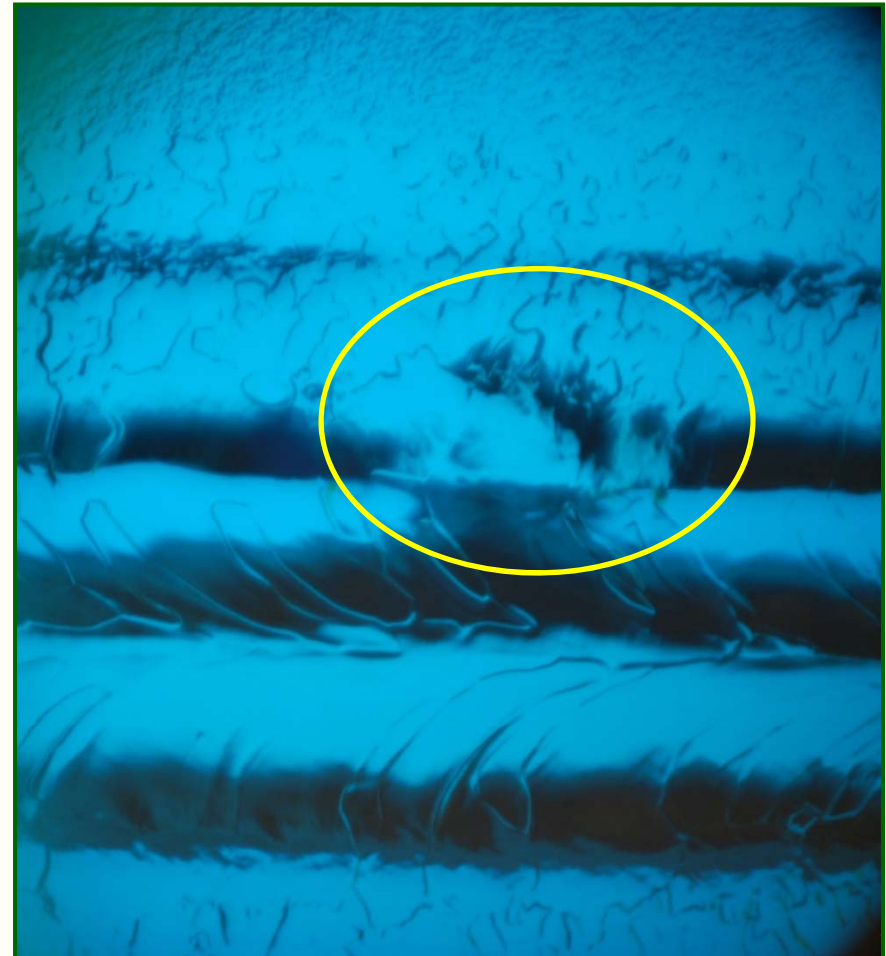


- Long-distance microscope inspected equator region of 9-cell JL001 (quench limit 25 MV/m) & ACCEL8 (quench limit 32 MV/m).
- AES4 2X 1-cell thermometry (1st & 2nd cell from long beam tube).
- ACCEL12 bulk EP, 600 C furnace hydrogen out-gassing done. Light EP June 5.
- ACCEL7 (light EP'ed at ANL) ultrasonic cleaning, HPR, assembly done. RF test June 4.
- ACCEL6 HPR, assembly done and shipped under vacuum to FNAL; ICHIRO5 returned to KEK.

Courtesy of Rongli Geng



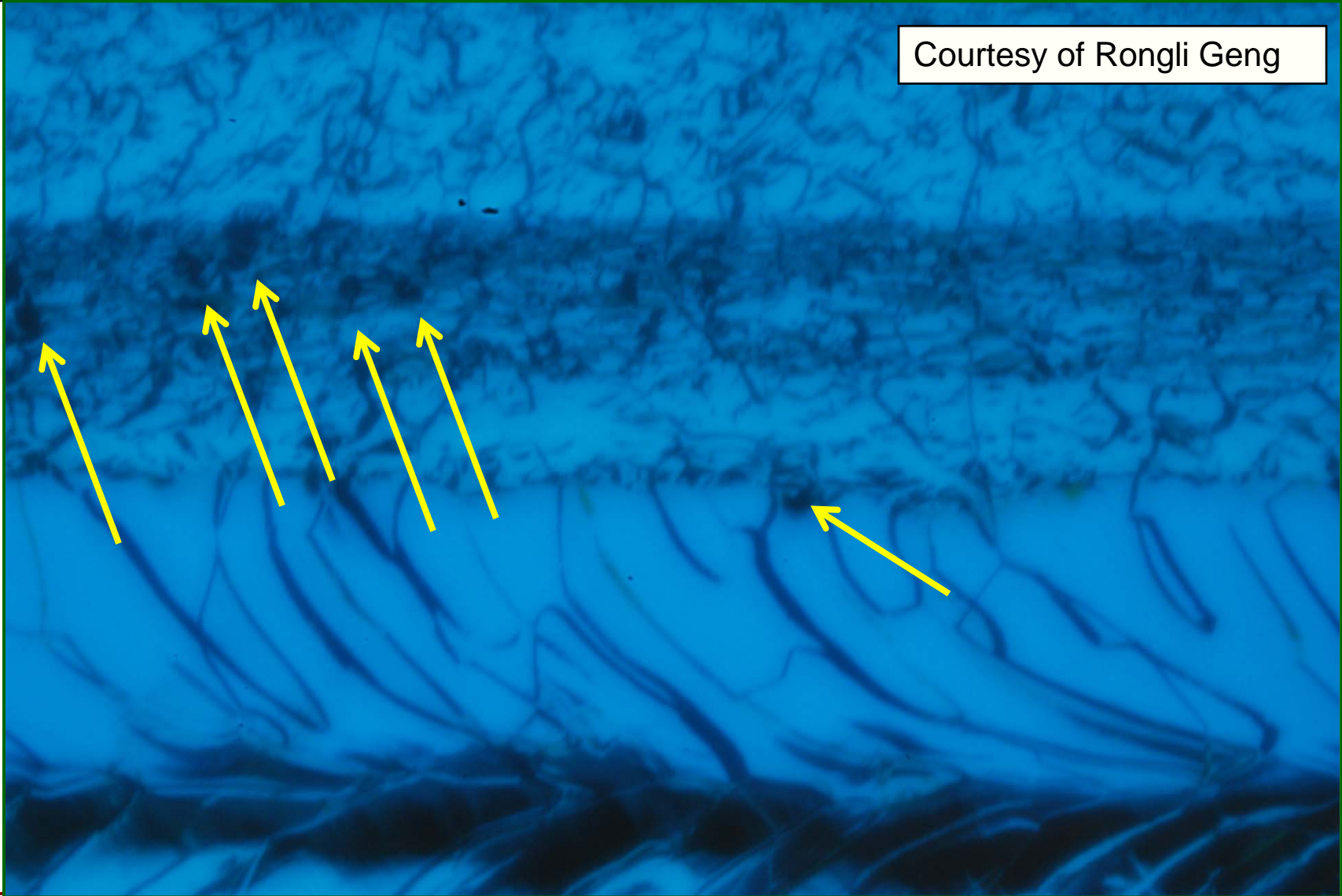
ACCEL8 (32MV/m) Equator 2nd Cell from FPC

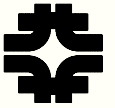


Courtesy of Rongli Geng



JL001 (25 MV/m), Equator (BCP only + 1250C)
2nd Cell from FPC





Argonne/Fermilab

1. Complete and commission the Argonne cavity processing facility.
2. Electro-polish Accel-7 to qualify nine-cell EP process.
3. Process and test 2-3 new nine-cell cavities.
4. Process and test a few single-cell cavities.
5. Acquire industrialized Kyoto/KEK optical inspection system.
6. Commission the single-cell temperature-mapping system.

Cornell

1. Carry out final EP and test for 2-3 new nine-cell cavities with bulk EP, hydrogen degassing and tuning done at Argonne/Fermilab.

Jefferson Lab

1. Test Accel-7 following EP at Argonne.
2. Process and test 3-4 new nine-cell cavities.
3. Utilize “2 of 9” temperature mapping system and optical inspection system to localize defects.
4. Acquire industrialized Kyoto/KEK optical inspection system.
5. Complete the fabrication of two nine-cell fine-grain cavities.