

## Dr. Matthew C. Jewell

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### Education

**Ph.D. Materials Science**, August 2008  
University of Wisconsin – Madison GPA 3.8/4.0  
Advisor: David Larbalestier  
Thesis title: *The effect of strand architecture on the fracture propensity of Nb<sub>3</sub>Sn composite superconductors*

**M.S. Materials Science**, May 2005  
University of Wisconsin – Madison GPA 3.9/4.0

**B.S. Materials Science and Engineering**, *with highest distinction*, December 2002  
University of Wisconsin – Madison GPA 3.9/4.0

### Academic experience

**Associate Professor, Materials Science & Biomedical Engineering Department,  
University of Wisconsin – Eau Claire**  
August 2017 - present

**Assistant Professor, Materials Science Program, University of Wisconsin – Eau  
Claire**  
August 2011 – August 2017

**Monaco Postdoctoral Fellow, ITER Organization**  
January 2009 – August 2011

**Research Assistant, University of Wisconsin – Madison**  
January 2003 – August 2008

**Research Assistant, National High Magnetic Field Laboratory (Internship)**  
October 2006 – August 2008

**Teaching Assistant, University of Wisconsin – Madison**  
August 2005 – May 2006

**K-through-infinity teaching fellow, University of Wisconsin – Madison**  
June 2004 – May 2005

## Teaching experience

### At UW-Eau Claire

- *Phase Transformations & Kinetics* lecture (MSE 357), 2017 – present
- *Materials Science & Biomedical Engineering Senior Capstone* sequence (MSCI 484/485, MSE 486/487 and BME 486, formerly MSCI 480/481), 2016 – present
  - Includes online Winter term version of MSCI 485/MSE 487
- *Macroprocessing of Materials* lecture and/or lab (MSE 367/368), 2018 – present (not every semester)
- *Materials Science Junior Seminar* (MSCI 385/MSE 387), 2020 - 2021
- *College Physics* lecture and/or lab (Phys 211), 2011 – present
- *Introduction to Materials Science and Nanoscience* lecture and/or lab (MSCI 100), 2011 – 2015
- *Advanced Materials Science and Nanoscience* lecture (MSCI 382), 2013 – 2016
- *Thermodynamics and Kinetics of Materials* lab (MSCI 300), 2012
- *Materials Science Directed Study* (MSCI 395), 2018 (3 students)
- *Materials Science Independent Study* (MSCI 399/499), 2011 – present (approximately 40 student experiences through Fall 2022)

### At UW-Madison

- *Materials Lab I* (MSCI 360) teaching assistant, 2005 – 2006

### New course development and contributions to scholarship of teaching and learning

- New lecture courses developed: MSE 357, MSE 367
- New lab courses developed: MSE 368
- Existing course overhauls: MSCI 484/485 and MSE 486/487 (including an online asynchronous version of MSCI 485/MSE 487)
- M.C. Jewell, *Strategies for student engagement in asynchronous online classrooms*, oral presentation at the 2021 RM<sup>2</sup>N Symposium, February 25, 2021.

## Extramural Research Awards

**Tommy G. Thompson Center on Public Leadership:** *Implementing the Wisconsin Idea During Crises: Identifying Opportunities for UW System to Respond Effectively to Public Emergencies*, \$37,292 over one year, including funding for two UWEC student research collaborators. Two UWEC co-PIs.

**Awarded July 2021**

**U.S. Department of Energy:** *Magnet conductor cost reduction and performance enhancement via manufacturing optimization*, \$225,000 over three years, including funding for four UWEC student research collaborators.

**Awarded August 2020**

(continued on next page)

**Tommy G. Thompson Center on Public Leadership:** *Identifying opportunities for Wisconsin to participate in advanced energy manufacturing*, \$44,273 over one year, including funding for two UWEC student research collaborators. Two UWEC co-PIs.

Awarded July 2019

**ITER Organization:** *Superconductor Sample Testing* \$157,681 over three years, including funding for three UWEC student research collaborators.

Awarded April 2018

**National Science Foundation:** *Acquisition of a Confocal Laser Scanning Microscope to Enable Cutting-edge Undergraduate Research and Research Training across Disciplines*, \$459,569 as a Major Research Instrumentation award.

Awarded July 2014

**U.S. Department of Energy:** *Mechanical performance of HTS superconductors*, \$750,000 over five years, including funding for one postdoctoral researcher and four UWEC student research collaborators.

Awarded July 2013

**ITER Organization:** *Strand and conductor manufacture quality control monitoring*, \$86,000 over three years, including funding for two UWEC student research collaborators.

Awarded January 2012

**Fermi National Accelerator Laboratory:** *CS Nb<sub>3</sub>Sn Conductor Qualification*, \$24,072 over eight months, including funding for one UWEC student research collaborator.

Awarded March 2012

**Commercial R&D support**

\$12,800 over 10 months, including funding for one UWEC student research collaborator.

Awarded October 2012

## Honors, Awards, and Fellowships

- 2016 Ted Van Duzer prize winner, IEEE Council on Superconductivity (best paper published in *IEEE Transactions on Applied Superconductivity* that year)
- 2012 UWEC Services for Students with Disabilities Recognition Award
- 2009 ITER-Monaco Fellowship recipient
- 2005 – 2006 Best Teaching Assistant, MS&E department, UW – Madison
- 2004 – 2005 National Science Foundation K-through-infinity Graduate Fellowship recipient
- 2003 – 2004 National Science Foundation Graduate Fellowship Honorable Mention
- 2003 – 2004 University of Wisconsin Graduate Fellowship recipient
- 2003 International Cryogenics Materials Conference “Student Meritorious Paper Award” winner
- 2001 – 2002 UW – Madison Hilldale Undergraduate Research Fellowship recipient

## Professional Involvement

- U.S. Dept. of Energy Conductor Research & Development Program (CRDP) Advisory Board member (2020 – present)
- Applied Superconductivity Conference (ASC) Board Member (2014 – present)
- Applied Superconductivity Conference (ASC) Sponsorship co-chair (2020 – 2022)
- Applied Superconductivity Conference (ASC) Conference Chair (2018)
- IEEE Council on Superconductivity Technical Operations Chair (2014 – present)
- Technical editor, *IEEE Transactions on Applied Superconductivity*, 2012 – present
- Advisory Board, *Superconductor Science and Technology*, 2011 - 2012
- IEEE Senior member and IEEE Magnetics Society member, 2011 - present
- ASM International member, 1999 – present
- AAAS (American Association for the Advancement of Science) member, 2011 – present
- Regular service to technical conferences via program committees, local organizing committees, serving as session chair, and serving as a technical editor for conference publications.

## Mentoring and Outreach

- 45 UW-Eau Claire student-faculty research collaborations since 2011, including one Goldwater Scholar, two Goldwater honorable mention recipients, one NSF GRFP honorable mention recipient, and four on-campus (Kell or Lord-Larson) research scholarship recipients.
- Chair, UWEC WiSys Quick Pitch organizing committee (2017 – present)
- Co-founder and steering committee member, UWEC Art AND Science program (2013 – present)
- NSF Research Experience for Undergraduates (REU) mentor at UW-Eau Claire, Florida State University, and UW-Madison.
- Project Mentor for Masters in Fusion Science Internship Program, ITER Organization
- Annual reviewer for Regeneron Science Talent Search (2016 – present)
- Public science outreach seminars:
  - M.C. Jewell, *Materials Challenges for Nuclear Fusion*, UWEC Ask-a-scientist lecture series, December 19, 2018.
  - M.C. Jewell and J.E. Rybicki, *Silent Sky: Where are we?*, UWEC Ask-a-scientist lecture series, November 2, 2016.
  - M.T. Dylla, S.E. Schultz, and M.C. Jewell, *Building a Better Magnet: Fracture Mechanics of Niobium-Tin-Based Superconducting Filaments*, UWEC ORSP Faculty Forum lecture series, March 11, 2015.
  - M.C. Jewell, *A Brief History of Materials*, UWEC Ask-a-scientist lecture series, February 20, 2013
  - M.C. Jewell and D.C. Larbalestier, *Applying Superconductivity – Materials and Applications*, NHMFL RET colloquium, June 25, 2008.
  - M.C. Jewell, *Superconductivity in the real world*, Panhandle Area Educational Consortium (PAEC) Seminars in Emerging Science lecture series, October 26, 2007.
- Regular participant in science outreach efforts, including Girl Scouts Science Trekkers program, UWEC/Mayo Clinic IMPACT event, UWEC Blugold Beginnings, UWEC NanoDays, Chi-Hi STEM outreach day, NHMFL Project Superconductivity, NHMFL I-Wall display, the NHMFL Open House, and others.

## Publications

1. R. Warr, M.C. Jewell, N. Mitchell, A. Rack, J. Swanson, V. Tronza, and R. Cernik, "High-energy synchrotron X-ray tomography coupled with Digital Image Correlation highlights likely failure points inside ITER toroidal field conductors," *Scientific Reports*, **11** 23141 (2021) <https://www.nature.com/articles/s41598-021-01999-5>.
2. W.N. Hartnett, J. Ramirez, T.E.R. Olson, C.T. Hopp, M.C. Jewell, A.R. Knoll, D.W. Hazelton, and Y.Zhang, "Characterization of Edge Damage Induced on REBCO Superconducting Tape by Mechanical Slitting," *Eng. Res. Express* **3** 035007 (2021) <https://doi.org/10.1088/2631-8695/ac0fc3>.
3. A. Vostner, M.C. Jewell, I. Pong, N. Sullivan, A. Devred, D. Bessette, G. Bevillard, N. Mitchell, G. Romano, and C. Zhou, "Statistical Analysis of the Nb<sub>3</sub>Sn Strand Production for the ITER TF Coils" *Supercond. Sci. Technol.*, **30** 045004, (2017).
4. M.T. Dylla, S.E. Schultz, and M.C. Jewell, "Fracture Strength Distribution of Individual Nb<sub>3</sub>Sn Filaments", *IEEE Trans. Appl. Supercond.*, **26** 6001907 (2016). **Selected as Ted van Duzer prize winner for best paper published in IEEE Transactions on Applied Superconductivity in 2016.**
5. C. Sanabria, P.J. Lee, W. Starch, T. Blum, A. Devred, M.C. Jewell, I. Pong, N. Martovetsky, and D.C. Larbalestier, "Metallographic Autopsies of full-scale ITER prototype cable-in-conduit conductors after full testing in SULTAN: 1. The mechanical role of copper strands in a CICC," *Supercond. Sci. Technol.* **28** 085005 (2015).
6. N. Cheggour, P.J. Lee, L.F. Goodrich, Z.-H. Sung, T.C. Stauffer, J.D. Splett, and M.C. Jewell, "Influence of the heat treatment conditions, microchemistry, and microstructure on the irreversible strain limit of a selection of Ti-doped internal-tin Nb<sub>3</sub>Sn ITER wires," *Supercond. Sci. Technol.* **27** 105004 (2014).
7. A. Vostner, I. Pong, D. Bessette, A. Devred, S. Sgobba, A. Jung, K.-P. Weiss, M.C. Jewell, S. Liu, W. Yu, T. Boutboul, K. Hamada, S.-H. Park, V. Tronza, and R.P. Walsh, "Benchmarking of mechanical test facilities related to ITER CICC steel jackets," *IEEE Trans. Appl. Supercond.*, **23** 9500705 (2013).
8. I. Pong, A. Vostner, B. Bordini, M. Jewell, F. Long, W. Yu, L. Bottura, A. Devred, D. Bessette, and N. Mitchell, "Current sharing temperature of NbTi SULTAN samples compared to prediction using a single pinning mechanism parameterization for NbTi strand," *Supercond. Sci. Technol.* **25** 054011 (2012).
9. M.K. Sheth, P.J. Lee, D.M. McRae, R. Walsh, W.L. Starch, M.C. Jewell, A. Devred, and D.C. Larbalestier, "Procedure for evaluating filament cracking during fatigue testing of Nb<sub>3</sub>Sn strand," *Advances in Cryogenic Engineering*, **58** 201 – 208 (2012).
10. M. Breschi, A. Devred, M. Casali, D. Bessette, M.C. Jewell, N. Mitchell, I. Pong, A. Vostner, P. Bruzzone, T. Boutboul, N. Martovetsky, K. Kim, Y. Takahashi, V. Tronza, and W. Yu, "Results of the TF Conductor Performance Qualification Samples for the ITER Project," *Supercond. Sci. Technol.* **25**, 095004 (2012). **Featured Article.**
11. M. Breschi, P.L. Ribani, D. Bessette, A. Devred, and M. Jewell, "Error estimation in the measurement of TF conductors in the SULTAN facility," *IEEE Trans. Appl. Supercond.* **22**, 4805205 (2012).
12. C. Sanabria, P.J. Lee, W. Starch, I. Pong, A. Vostner, M.C. Jewell, A. Devred, and D.C. Larbalestier, "Evidence that filament fracture occurs in an ITER toroidal field conductor after cyclic Lorentz force loading in SULTAN," *Supercond. Sci. Technol.* **25**, 075007 (2012).

13. C. Calzolaio, P. Bruzzone, D. Uglietti, B. Stepanov, D. Bessette, and M. Jewell, "In-situ Tc measurements of cable-in-conduit conductors via an inductive method," *IEEE Trans. Appl. Supercond.* **22**, 9002604 (2012).
14. N. Cheggour, A. Nijhuis, H. Krooshoop, X. Lu, J. Speltt, T. Stauffer, L. Goodrich, M. Jewell, A. Devred, and Y. Nabara, "Strain and magnetic-field characterization of a bronze-route Nb<sub>3</sub>Sn ITER wire: Benchmarking of strain measurement facilities at NIST and University of Twente," *IEEE Trans. Appl. Supercond.* **22**, 4805104 (2012).
15. A. Devred, I. Backbier, D. Bessette, G. Bevillard, M. Gardner, M. Jewell, N. Mitchell, I. Pong, and A. Vostner, "Status of ITER Conductor Development and Production," *IEEE Trans. Appl. Supercond.* **22**, 4804909 (2012).
16. K. Hamada, Y. Nunoya, T. Isono, Y. Takahashi, K. Kawano, T. Saito, M. Oshikiri, Y. Uno, N. Koizumi, H. Nakajima, H. Matsuda, Y. Yano, A. Devred, P. Libeyre, D. Bessette, and M. Jewell, "Preparation for the ITER Central Solenoid conductor manufacturing," *IEEE Trans. Appl. Supercond.* **22**, 4203404 (2012).
17. P. Libeyre, D. Bessette, M. Jewell, C. Jong, C. Lyraud, F. Rodriguez-Mateos, K. Hamada, W. Reiersen, N. Martovetsky, C. Rey, R. Hussung, S. Litherland, K. Freudenberg, L. Myatt, E. Dalder, R. Reed, and S. Sgobba, "Addressing the technical challenges for the construction of the ITER Central Solenoid," *IEEE Trans. Appl. Supercond.* **22**, 4201104 (2012).
18. S.A. March, P. Bruzzone, B. Stepanov, D. Bessette, and M. Jewell, "Effect of thermal loading on Nb<sub>3</sub>Sn CICC performance," *IEEE Trans. Appl. Supercond.*, **22**, 4803604 (2012).
19. I. Pong, M. Jewell, B. Bordini, L. Oberli, S. Liu, F. Long, T. Boutboul, P. Readman, S.H. Park, P.Y. Park, V. Patsyrny, V. Tronza, N. Martovetsky, J. Lu, and A. Devred, "Worldwide benchmarking of ITER internal tin and NbTi strand test facilities," *IEEE Trans. Appl. Supercond.*, **22**, 4802606 (2012).
20. M. Sheth, P. Lee, D. McRae, C. Sanabria, W. Starch, R. Walsh, M. Jewell, A. Devred, and D. Larbalestier, "Study of filament cracking under uniaxial repeated loading for ITER TF strands," *IEEE Trans. Appl. Supercond.* **22**, 4802504 (2012).
21. B. Bordini, D. Bessette, L. Bottura, A. Devred, M. Jewell, D. Richter, C. Senatore, "Magnetization and Inter-filament contact in HEP and ITER bronze-route Nb<sub>3</sub>Sn wires," *IEEE Transactions on Applied Superconductivity*, **21**, 3373 (2011).
22. M. C. Jewell, T. Boutboul, L. Oberli, F. Liu, Y. Wu, A. Vostner *et al.*, "World-wide benchmarking of ITER strand test facilities," *IEEE Transactions on Applied Superconductivity*, **20**, 1500 (2010).
23. K. Seo, M. C. Jewell, C. Capuano, G. Bevillard, S. Modi, D. Bessette, and A. Devred, "Implementation of the ITER Conductor Database," *IEEE Transactions on Applied Superconductivity*, **20**, 499 (2010).
24. A.A. Polyanskii, P.J. Lee, E. Barzi, D. Turrioni, A.V. Zlobin, and D.C. Larbalestier, "Evidence for highly localized damage in internal tin and powder-in-tube Nb<sub>3</sub>Sn strands rolled before reaction obtained from coupled magneto-optical imaging and confocal laser scanning microscopy," *Superconductor Science and Technology*, **22**, 095008 (2009).  
**Selected as featured paper on journal cover.**
25. A. Nijhuis, Y. Miyoshi, M.C. Jewell, W. Abbas, and W.A.J. Wessel, "Systematic study on filament fracture distribution in ITER Nb<sub>3</sub>Sn strands," *IEEE Transactions on Applied Superconductivity*, **19**, 2628 (2009).

26. E.G. Mednikov, M.C. Jewell, and L.F. Dahl, "Nonosized ( $\mu(12)$ -Pt)Pd<sub>164-x</sub>Pt<sub>x</sub>(CO)(72)(PPh<sub>3</sub>)(20) (x approximate to 7) containing Pt-centered four-shell 165-atom Pd-Pt core with unprecedented intershell bridging carbonyl ligands: Comparative analysis of icosahedral shell-growth patterns with geometrically related Pd-145(CO)(x)(PET<sub>3</sub>)(30) (x approximate to 60) containing capped three-shell Pd-145 core," *Journal of the American Chemical Society*, **129**, 11619 (2007)
27. Y. Zhu, A. Matsumoto, B.J. Senkowicz, H. Kumakura, H. Kitaguchi, M.C. Jewell, E.E. Hellstrom, D.C. Larbalestier, and P.M. Voyles, "Microstructures of SiC nanoparticle-doped MgB<sub>2</sub>/Fe tapes," *Journal of Applied Physics*, **102**, 013913 (2007).
28. A. Matsumoto, H. Kumakura, H. Kitaguchi, B.J. Senkowicz, M.C. Jewell, E.E. Hellstrom, Y. Zhu, P.M. Voyles, D.C. Larbalestier, "Evaluation of connectivity, flux pinning and upper critical field contributions to the critical current density of bulk MgB<sub>2</sub>," *Applied Physics Letters*, **89**, 132508 (2006).
29. A.A. Polyanskii, A.A. Squitieri, M.C. Jewell, P.J. Lee, A. Gurevich, D.C. Larbalestier, P. Bauer, L. Bellantoni, C. Boffo, H. Edwards, "Inhomogeneous Flux Penetration in Niobium Sheet Sampled Across the Cavity Production Route," accepted for publication in *SRF 2005 – Proceedings* (not peer-reviewed).
30. A. Godeke, M. C. Jewell, C. M. Fischer, A. A. Squitieri, P. J. Lee, and D. C. Larbalestier, "The upper critical field of filamentary Nb<sub>3</sub>Sn conductors," *J. Appl. Phys.*, **97-9**, 093909 (2005) (also selected to appear in *Virtual Journal of Applications of Superconductivity*, May 1, 2005).
31. P. Bauer, L. Bellantoni, C. Boffo, H. Edwards, M. C. Jewell, D. C. Larbalestier, P. J. Lee, A. Polyanskii, A. A. Squitieri, "An Investigation of the Properties of BCP Niobium for Superconducting RF Cavities," Argonne National Laboratory Report ANL-05/10, ed. Kwang-Je Kim and Catherine Eyberger, pp 84-93, March 2005 (presented at the "Pushing the Limits of RF Superconductivity" workshop, held at Argonne National Laboratory, September 22-24, 2004). (also published in *ICFA Beam Dynamics Newsletter*, Issue No. 39, April 2006).
32. V. Braccini, A. Gurevich, J. E. Giencke, M. C. Jewell, C. B. Eom, D. C. Larbalestier *et al.*, "High-field superconductivity in alloyed MgB<sub>2</sub> thin films," *Phys. Rev. B*, **71** 012504 (2005).
33. M. C. Jewell, A. Godeke, P. J. Lee, and D. C. Larbalestier, "The upper critical field of stoichiometric and off-stoichiometric bulk, binary Nb<sub>3</sub>Sn," *Adv. Cryo. Eng. (Materials)*, **50B**, 474 (2004).
34. P. Bauer, L. Bellantoni, T. Berenc, C. Boffo, R. Carcagno, C. Chapman, H. Edwards, L. Elementi, M. Foley, E. Hahn, D. Hicks, T. Khabiboulline, D. Mitchell, A. Rowe, N. Solyak, I. Terechkine, M.C. Jewell, D. C. Larbalestier, P.J. Lee, A. Gurevich, A.A. Polyanskii, A.A. Squitieri, "SRF Cavity and Materials R&D at Fermilab," Paper MOP82 at LINAC 2004, held August 16-20, 2004 in Lübeck, Germany, published in *LINAC 2004 – Proceedings* (not peer-reviewed).
35. A. Godeke, M. C. Jewell, A. A. Golubov, B. Ten Haken and D. C. Larbalestier, "Inconsistencies between extrapolated and actual critical fields in Nb<sub>3</sub>Sn wires as demonstrated by direct measurements of H<sub>c2</sub>, H\*, and T<sub>c</sub>," *Supercond. Sci. Tech.*, **16**, 1019 (2003).
36. M. C. Jewell, P. J. Lee and D. C. Larbalestier, "The influence of Nb<sub>3</sub>Sn strand geometry on filament breakage under bend strain as revealed by metallography," *Superconductor*



*Science and Technology*, **16**, 1005 (2003). **Selected as featured paper on journal cover.**

37. M. T. Naus, M. C. Jewell, P. J. Lee and D. C. Larbalestier, " Lack of influence of the Cu-Sn mixing heat treatments on the super-conducting properties of two high-Nb, internal-Sn Nb<sub>3</sub>Sn conductors," *Adv. Cryo. Eng. (Materials)*, **48**, 1016 (2001).

## Oral Presentations

1. M.C. Jewell and R.R. Oberg, “Analysis of Bi-2212 Superconducting Filament Joining using Deep Learning Methods,” *2022 Applied Superconductivity Conference*, Honolulu, HI, October 24, 2022.
2. M.C. Jewell and R.R. Oberg, “Quality control techniques for Bi-2212 composite strand using machine learning,” *2022 Low Temperature Superconductor Workshop*, Tallahassee, FL, May 3-5, 2022.
3. N. Hartnett, J. Ramirez, T. Olson, C. Hopp, M. Jewell, A. Knoll, D. Hazelton, and Y. Zhang, “Edge damage inducted by mechanical slitting on REBCO HTS tapes,” oral presentation at *2021 CEC-ICMC virtual conference*, July 19-23, 2021. **Invited presentation**
4. M.C. Jewell, *UW-Eau Claire research alignment with GARD and MDP*, oral presentation at the 2021 U.S. MDP Collaboration Meeting (virtual), March 1 – 5, 2021.
5. M.C. Jewell, *Strategies for student engagement in asynchronous online classrooms*, oral presentation at the 2021 RM<sup>2</sup>N Virtual Symposium, February 25, 2021.
6. M.C. Jewell, T.A. Kemp, J. Nui, K. Crawford, and B. Langolf, “Advancing Wisconsin’s Green Manufacturing Economy”, virtual presentation at UW-Madison WARF Cleantech Forum, August 26, 2020.
7. M.C. Jewell, B. Thronson, T. Doan, “Mechanical behavior of Nb<sub>3</sub>Sn wires in ITER TF CICC under Lorentz force and thermal cycling,” *2020 Low Temperature Superconductor Workshop*, Berkeley, CA, February 27, 2020.
8. M.C. Jewell, N. Cheggour, T.C. Stauffer, S.V. Sortedahl, J.A. Egner-Schnitzler, G. Deprenger-Gottfried, and J. Jiang, “Variation in strain sensitivity and microstructure as a function of overpressure processing conditions for Ag-sheathed Bi-2212 round wire,” *2019 International Cryogenic Materials Conference*, Hartford, CT, July 23, 2019.
9. M.C. Jewell, T.J. Lui, B. Dallmann, “Impact of powder source on processing characteristics of Bi-2212 composite strand,” *2019 Low Temperature Superconductor Workshop*, Charleston, SC, February 12, 2019.
10. M.C. Jewell, G.L. Deprenger-Gottfried, S.V. Sortedahl, A.R. Putney, C.T. Hopp, T.E.R. Olson, G.L. Hawkins, N. Cheggour, and J. Jiang, “Microstructural origins of degradation in Bi-2212 composite wires,” *2016 Low Temperature Superconductivity Workshop*, Santa Fe, NM, February 8-10, 2016.
11. M.C. Jewell and N.J. Sullivan, “Investigation of TF Nb<sub>3</sub>Sn Cr plating damage,” oral presentation at the *2015 ITER Conductor Workshop*, Grindelwald, Switzerland, 17-19 March 2015.
12. M.C. Jewell and A. Vostner, “Maturity of Nb<sub>3</sub>Sn – the view from fusion,” oral presentation at the 2011 *Low Temperature High Field Superconductivity Workshop*, Providence, RI, November 7 – 9, 2011.
13. M.C. Jewell, A. Vostner, D. Bessette, A. Devred *et al.*, “Performance qualification of the ITER TF magnet conductors,” presented at 2010 Applied Superconductivity Conference, Washington, DC, August 1-6, 2010.
14. M.C. Jewell, A. Nijhuis, P.J. Lee, and D.C. Larbalestier, “Fracture in ITER and HEP Nb<sub>3</sub>Sn strands under bending at 77K,” presented at 2008 Applied Superconductivity Conference, Chicago, IL, August 19 – 23, 2008.

15. M.C. Jewell, P.J. Lee, and D.C. Larbalestier, “Irreversible strain in Nb<sub>3</sub>Sn conductors,” presented at the 2008 CARE-HHH-AMT WAMSDO workshop, May 20, 2008. **Invited presentation**
16. M.C. Jewell, P.J. Lee, and D.C. Larbalestier, “Nb<sub>3</sub>Sn filament fracture observations for CICC applications,” presented at the 20<sup>th</sup> Magnet Technology Workshop, Philadelphia, PA, August 27 – 31, 2007 (presented by P.J. Lee in my absence).
17. M.C. Jewell, P.J. Lee, and D.C. Larbalestier, “Nb<sub>3</sub>Sn fracture at cryogenic temperatures: a metallographic perspective,” presented at 2007 International Cryogenic Materials Conference, Chattanooga, TN, July 16 – 20, 2007.
18. M.C. Jewell, P.J. Lee, and D.C. Larbalestier, “Strand Architecture Effects in Nb<sub>3</sub>Sn Filament Cracking and fracture toughness,” presented at 2007 ITER Conductor Modeling Workshop, Cadarache, France, January 15 – 17, 2007.
19. M.C. Jewell, B.J. Senkowicz, P.J. Lee and D.C. Larbalestier, “Strand Architecture Effects in Nb<sub>3</sub>Sn Filament Cracking,” presented at 2006 Low Temperature Superconductivity Workshop, Tallahassee, FL, November 7 – 9, 2006.
20. M.C. Jewell, T.J. Gerczak, and D.C. Larbalestier, “Putting a Different ‘P’ in PIT: Phase Equilibria in High-Sn Intermetallics,” presented at 2006 Applied Superconductivity Conference, Seattle, WA, August 27 – September 1, 2006.
21. M.C. Jewell, T.J. Gerczak, P.J. Lee, and D.C. Larbalestier, “Novel Approaches to Forming Nb<sub>3</sub>Sn,” presented at 2005 Low Temperature Superconductivity Workshop, Napa, CA, November 7-9, 2005.
22. M.C. Jewell, “SBIR Reporting Analysis” presented at 2004 Low Temperature Superconductivity Workshop, Monterey, CA, November 15-17, 2004.
23. M. C. Jewell, A. Godeke, P. J. Lee and D. C. Larbalestier, “Off-Stoichiometric Effects in Nb<sub>3</sub>Sn,” presented at 2003 Low Temperature Superconductivity Workshop, Monterey, CA, November 10-12, 2003.
24. M. C. Jewell, A. Godeke, P. J. Lee, and D. C. Larbalestier, “The upper critical field of stoichiometric and off-stoichiometric Nb<sub>3</sub>Sn,” presented at 2003 International Cryogenic Materials Conference, Anchorage, AK, September 2003.
25. P. J. Lee, M. C. Jewell and D. C. Larbalestier, “The influence of Nb<sub>3</sub>Sn strand geometry on filament breakage under bend strain as revealed by metallography,” presented at 2<sup>nd</sup> Workshop on Mechano-Electromagnetic Properties of Composite Superconductors (MEM03), Kyoto, Japan, March 3-5, 2003 (presented by P.J. Lee in my absence).
26. M. C. Jewell, P. J. Lee and D. C. Larbalestier, “Irreversible bend strain in Nb<sub>3</sub>Sn strands: a metallographic perspective,” presented at 2002 Low-Temperature Superconductivity Workshop, Napa, CA, November 11, 2002.

### Poster Presentations at National or International Conferences

1. B.J. Thronson, A.J. Mantey, C.C. Johnson, M.C. Jewell, V. Tronza, and N. Mitchell, “Effects of electromagnetic and thermal cycling on ITER TF conductor samples after heat treatment and SULTAN testing,” poster presentation at 2020 Applied Superconductivity Conference, October 24 – November 7, 2020 (Virtual).
2. W.N. Hartnett, Y. Zhang, M.C. Jewell, “Investigation of Edge Damage Induced in Mechanical Slitting of REBCO HTS tapes,” poster presentation at 2020 Applied Superconductivity Conference, October 24 – November 7, 2020 (Virtual).
3. A. Doan, B.J. Thronson, M.C. Jewell, V. Tronza, and N. Mitchell, “Post-Mortem Mechanical Investigation of ITER TF Conductor Samples After Heat Treatment and SULTAN Testing,” poster presentation at 2019 International Conference on Magnet Technology (MT-26), September 22 – 27, 2019, Vancouver, BC, Canada.
4. J.A. Egner-Schnitzler, G.J. Peterka, L.J. Jarocki, and M.C. Jewell, “Characterization of Filament Damage on Externally and Internally Etched  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8-x}$  (Bi-2212) Superconducting Wires after Applying Simulated Walters Spring Strain,” poster presentation at *2018 Applied Superconductivity Conference*, October 29 – November 2, 2018, Seattle, WA, USA.
5. T.E.R. Olson, C.T. Hopp, B.S. Dallmann, Y. Zhang, and M.C. Jewell, “Investigation of Layer Composition and Topography of REBCO Superconducting Tape using Auger Electron Spectroscopy,” poster presentation at *2018 Applied Superconductivity Conference*, October 29 – November 2, 2018, Seattle, WA, USA.
6. T.J. Lui, B.S. Dallmann, Y. Huang, H. Miao, M.C. Jewell, “The Impact of Powder Source on the Processing Uniformity of Green-Treated  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8-x}$  (Bi-2212) Superconducting Wire Using Digital Image Analysis,” poster presentation at *2018 Applied Superconductivity Conference*, October 29 – November 2, 2018, Seattle, WA, USA.
7. W.N. Hartnett, J. Ramirez, M.C. Jewell and Y. Zhang, “Characterization of REBCO Superconducting Tape Damage Induced by Various Sample Preparation Methods,” poster presentation at *2018 Applied Superconductivity Conference*, October 29 – November 2, 2018, Seattle, WA, USA.
8. J.A. Egner-Schnitzler, L.J. Jarocki, and M.C. Jewell, “Microstructural damage in Bi-2212 composite wire as revealed by simulated Walters spring strain,” poster presentation at *2018 Low Temperature Superconductor Workshop*, February 12-14, 2018, Jacksonville, FL, USA.
9. M.C. Jewell, C.T. Hopp, and T.E.R. Olson, “Auger Electron Spectroscopy Investigation of Delamination Behavior in REBCO Superconducting Tapes,” poster presentation at the Low Temperature Superconductor Workshop, February 27 – March 1, 2017, Santa Fe, NM, USA.
10. C.T. Hopp, Y. Zhang, and M.C. Jewell, “Auger Electron Spectroscopy and Ar Sputtering for the Determination of  $\text{Y}_2\text{O}_3$  Buffer Layer Thickness in REBCO Superconducting Tapes,” poster presentation at 2017 International Cryogenic Materials Conference, July 9-13, 2017, Madison, WI, USA.
11. J. Egner-Schnitzler, C.T. Hopp, A. Putney, K. Thao, and M.C. Jewell, “Filament Damage in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8-x}$  (Bi-2212) Superconducting Wires as Revealed by External Etching,” poster presentation at 2017 International Cryogenic Materials Conference, July 9-13, 2017, Madison, WI, USA.

12. T.E.R. Olson, K. Berger, Y. Zhang, and M.C. Jewell, “Post-Delamination Structural Investigation of REBCO Superconducting Tape,” poster presentation at 2017 International Cryogenic Materials Conference, July 9-13, 2017, Madison, WI, USA.
13. S.V. Sortedahl, C.T. Hopp, G. Deprenger-Gottfried, A.R. Putney, K. Thao, N. Cheggour, and M.C. Jewell, “Characterization of Mechanical Properties of Composite  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  Superconductor through Scanning Electron Microscopy,” presented at the 2016 Applied Superconductivity Conference, Denver, CO, September 4 – 9, 2016.
14. G. Deprenger-Gottfried, S.V. Sortedahl, C.T. Hopp, A.R. Putney, T.E.R. Olson, G.L. Hawkins, and M.C. Jewell, “Characterization of Mechanical Properties of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  Superconductor through Scanning Electron Microscopy,” presented at the 2016 National Conference on Undergraduate Research, Asheville, NC, April 7 – 9, 2016.
15. M.C. Jewell, N. Cheggour, A. Kajbafvala, T.C. Stauffer, J. Jiang, and E.E. Hellstrom, “Strain and Microstructural Properties of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  Superconducting Wires” poster presented at the 2015 International Conference on Magnet Technology (MT-24), Seoul, South Korea, October 18 – 24, 2015.
16. J. Christian, J. Luhmann, and M.C. Jewell, “Nanoindentation of Cr-coated superconducting wires,” presented at the 2015 National Conference on Undergraduate Research, Spokane, WA, April 16 – 18, 2015.
17. N.J. Sullivan and M.C. Jewell “Characterization of Post-Reaction Void Structures from Various Pre-Reaction Architectures for Internal-Sn Process  $\text{Nb}_3\text{Sn}$  Wires” presented at the 2014 Applied Superconductivity Conference, Charlotte, NC, August 10 – 16, 2014.
18. M.T. Dylla, S.E. Schultz, N.J. Sullivan, and M.C. Jewell, “Fracture statistics of individual  $\text{Nb}_3\text{Sn}$  filaments,” presented at the 2013 Magnet Technology Conference (MT-23), Boston, MA, July 14 – 19, 2013.
19. M.C. Jewell, P.J. Lee, H. Bajas, C. Sanabria, W. Starch, and D.C. Larbalestier, “Development of metallographic procedures for imaging cable-in-conduit conductors,” presented at the 2010 Applied Superconductivity Conference, Washington, DC, August 1-6, 2010.
20. M. C. Jewell, T. Boutboul, L. Oberli, F. Liu, Y. Wu, A. Vostner *et al.*, “World-wide benchmarking of ITER strand test facilities,” presented at the 21<sup>st</sup> Magnet Technology Workshop, Hefei, China, October 19 – 23, 2009.
21. K. Seo, M. C. Jewell, C. Capuano, G. Bevilard, S. Modi, D. Bessette, and A. Devred, “Implementation of the ITER Conductor Database,” presented at the 21<sup>st</sup> Magnet Technology Workshop, Hefei, China, October 19 – 23, 2009.
22. M.C. Jewell, A. Godeke, P.J. Lee, and D.C. Larbalestier, “Sn Content and Inhomogeneities in ITER and HEP  $\text{Nb}_3\text{Sn}$  Strand,” presented at the 16<sup>th</sup> ANS Topical Meeting on the Technology of Fusion Energy, Madison, WI, September 14-16, 2004.
23. M. C. Jewell, S. A. Hynes, J. J. Uhlrich and M. Suenaga, “Sn and Ti Diffusion Effects in High  $I_c$  Internal-Sn Processed Wire,” presented at 2003 Low Temperature Superconductivity Workshop, Monterrey, CA, November 10-12, 2003.
24. M. C. Jewell, D. C. Christensen, P. J. Lee and D. C. Larbalestier, “Crack Formation in  $\text{Nb}_3\text{Sn}$  Strands,” presented at 2001 International Cryogenic Materials Conference, Madison, WI, July 16-20, 2001.