Dr. Justin Schwartz, Chancellor
University of Colorado Boulder

Justin Schwartz began his service as the 12th Chancellor of the University of Colorado Boulder on July 1, 2024. The state's public flagship university and keystone of the four-campus CU System, CU Boulder enrolls more than 37,000 students and employs more than 19,000 individuals. The only American Association of Universities member in the Rocky Mountain region, the university is known for its strengths in climate/energy/sustainability, physics, aerospace engineering, biosciences, music, English and creative writing, psychology, and mental health and wellness, drawing more than $684 million in research funding last fiscal year. Ranked fifth in the nation for startup creation in 2023, CU Boulder had an estimated economic impact of $4.3 billion across Colorado in 2023 and is rapidly developing as a hub for quantum science and technology.

Prior to joining CU Boulder, Justin Schwartz served as the Executive Vice President and Provost (EVPP) at the Pennsylvania State University. Penn State is a longstanding member of the AAU and is consistently ranked among the nation's top public universities with highly ranked programs in a broad spectrum of academic disciplines. With over 6,500 full-time faculty and ~88,000 students at 24 physical campuses across the state and Penn State's World Campus, Penn State is amongst the nation's largest and most complex universities. Schwartz served as Penn State's Chief Academic Officer with direct responsibility for about a $2 billion budget supporting all sixteen academic colleges and schools, nineteen commonwealth campuses, World Campus, Student Affairs, University Libraries, Penn State Sustainability University Health Services, Penn State Global, the Schreyer Honors College, and the Offices of Educational Equity, Faculty Affairs, Affirmative Action, and Planning, Assessment and Institutional Research. Schwartz worked closely with President Neeli Bendapudi and her leadership team to set university priorities across Penn State.

A highly visible, engaging and transparent leader, Schwartz built a diverse leadership team and launched efforts to diversify faculty, close demographic gaps in student success to diversify Penn State's graduating classes, and to integrate student curricular and co-curricular experiences to provide holistic student experiences. Schwartz's tenure as EVPP afforded him leadership experiences during a transformational period in Penn State history and in an era of unique challenges facing higher education across the United States. Schwartz played a key role in developing and implementing a new university-wide budget allocation model and served as executive co-sponsor of an initiative to restructure support services across the university for organizational excellence. Schwartz led conversations within Penn State related to First Amendment rights and the requirements of Title VI, addressing campus safety concerns triggered first by speakers hosted by Penn State student organizations and more recently by events related to the war in Israel and Gaza. As Provost, Schwartz charged a university-wide task force to create and implement a Visitor Rights and Responsibilities policy, codifying Penn State's behavioral expectations for all campus visitors.

Prior to his transition to EVPP, Schwartz served as the Harold and Inge Marcus Dean of the College of Engineering. With over 400 faculty, 400 staff, 10,000 undergraduate and graduate students, and over $180 million in research expenditures and about $300 million in total expenditures, the College of Engineering is Penn State's largest, most comprehensive college.

During his tenure as Dean of the College of Engineering, Schwartz transformed the foundations of the college. The College's strategic plan was built upon four cornerstones: excellence, equity, social mobility, and sustainability. These cornerstones guided changes to the College's promotion and tenure criteria, which had not been updated in over two decades. Recognizing that cultural change only succeeds in academia via faculty participation, Schwartz engaged the College's faculty by using a novel "open source" approach to writing the new promotion and tenure guidelines, giving all faculty in the College an

opportunity to contribute directly to the writing of the new criteria. The resulting criteria explicitly recognize the challenges associated with bias in various forms of faculty evaluations.

Through Schwartz's leadership, Penn State emerged as a national engineering leader through the Engineering Equity Initiative. Schwartz set comprehensive goals for the College's equity culture and demographics, embodied in the College's Equity Action Plan, a roadmap to actualize the College's goals. The EAP is a detailed call to action, with clearly defined responsibilities and metrics for success. Schwartz was a leader amongst the national engineering community, co-leading his Big10+ decanal colleagues in an effort to request that ABET require equity education in engineering accreditation. To prepare the community for new accreditation requirements, he sponsored a national workshop on "Integrating Diversity, Equity, and Inclusion into Undergraduate Engineering Programs."

Under Schwartz's leadership, the College of Engineering diversified its tenure-line faculty, nearly doubling the number who identify as African-American/Black, doubling the number identifying as Latino/a, increasing the number of faculty who identify as female by over 75%, while recruiting the college's only faculty member who identifies as female Pacific Islander. Through his initiatives, the College expanded its interdisciplinary connections with Penn State's major research institutes, as well as many University Park colleges and Commonwealth Campuses, the College of Medicine, and the Applied Research Laboratory.

Schwartz provided a vision for impactful research at Penn State. Under his leadership, external research awards grew by over 50%, including significant increases in industry funding, and the graduate student population grew by 25%. The impact of his research vision extended beyond engineering, as he worked with colleagues to create new multidisciplinary research centers covering topics such as biodevices, artificial intelligence, and neurotechnology in mental health research. Schwartz played a key role in establishing Penn State's Global Building Network, a formal partnership with the United Nations, establishing Penn State's global leadership in building energy efficiency, human health, and social justice.

As Dean of Engineering, Schwartz focused on student success and well-being for all Penn State engineering students. The College modernized entrance-to-major processes and launched Engineering Connect, a program addressing the biggest hurdles faced by first-year students. Schwartz created the Project Drawdown Research Experience for Undergraduates program bringing students from across the U.S. to Penn State for summer research within six different Colleges, focusing on climate change action.

Schwartz led the College through a fundraising campaign which raised $250 million, nearly doubling the College's total endowment. Gifts include the largest single gift to the College, $15.5 million from the Clark Foundation to create the Clark Scholars Program, and a $7 million gift to name the Ken and Mary Alice Lindquist Department of Nuclear Engineering, the only named nuclear engineering department in the U.S. Schwartz advanced the College's relationships with alumni by restructuring the Industrial and Professional Advisory Committee and cultivating strong engagement with the Penn State Engineering Alumni Society and the Engineering Development Council.

Schwartz is a Fellow of the National Academy of Inventors, AAAS, IEEE, and the ASM-International. He is the recipient of the IEEE Council on Superconductivity Award for Significant and Sustained Contributions to Applied Superconductivity and the TMS John Bardeen Award. He has given plenary and keynote addresses at United Nations events and around the globe.

CURRICULUM VITAE

Education

Ph.D., Nuclear Engineering, Massachusetts Institute of Technology, 1990

B.S., Nuclear Engineering, University of Illinois at Urbana, 1985 (Highest Honors and Bronze Tablet)

Professional Experience

University of Colorado Boulder

- 07/24 – present: Chancellor

Pennsylvania State University

- 04/24 – 06/24: Special Advisor to the President
- 04/23 – 04/24: Executive Vice President and Provost
- 08/22 – 04/23: Interim Executive Vice President and Provost
- 08/17 – 08/22: Harold and Inge Marcus Dean of Engineering
- 08/17 – 06/24: Professor, Department of Engineering Science & Mechanics
- 08/17 – 06/24: Professor, Department of Materials Science & Engineering (courtesy appointment)

North Carolina State University

- 08/09 – 08/17: Department Head and Kobe Steel Distinguished Professor, Department of Materials Science & Engineering
- 09/11 – 08/17: Affiliated Professor, Department of Physics
- 09/11 – 08/17: Affiliated Professor, Department of Nuclear Engineering
- 06/12 – 12/13: Interim Director, Analytical Instrumentation Facility, College of Engineering

Florida State University

- 04/05 – 08/09: Jack E. Crow Professor of Engineering
- 08/01 – 12/02: Senior Research Advisor to the Vice President for Research
- 08/99 – 04/05: Professor of Mechanical Engineering
- 12/93 – 08/99: Associate Professor of Mechanical Engineering
- 12/93 – 08/09: Leader, HTS Magnets and Materials Conductor Development Group, NHMFL

University of Illinois at Urbana

- 8/92 – 12/93: Assistant Professor of Mechanical and Industrial Engineering
- 2/90 – 12/93: Assistant Professor of Nuclear Engineering

National Research Institute for Metals, Superconducting Materials Research Group, Japan

- 2/90 – 8/90: Visiting Scientist under Dr. H. Maeda

Entrepreneurial Experience

Lupine Materials & Technology, Founder and CEO
Eagle Power Technologies, Co-Founder and CTO

ACADEMIC LEADERSHIP ACCOMPLISHMENTS

Pennsylvania State University

- ***Executive Vice President and Provost***
  - Chief Academic Officer for over 8,000 academic faculty (6,500 full-time) and ~88,000 students
  - Led sixteen academic colleges and schools at University Park, nineteen Commonwealth Campuses, Hershey College of Medicine, Penn State Dickinson Law, World Campus, Student Affairs, Penn State Sustainability, Schreyer Honors College, University Libraries, Penn State

Global, and the Offices of Educational Equity, Faculty Affairs, Affirmative Action, and Planning, Assessment, and Institutional Research
  - Implemented a university-wide policy of Visitor Rights and Responsibilities to enable Penn State to protect its values while fully supporting First Amendment rights and Title VI protections for all university stakeholders.
  - In collaboration with Faculty Senate, launched Joint Standing Committees on Artificial Intelligence and Faculty Safety
  - Launched Provost's Endorsement Program to provide faculty with credentialed professional development opportunities
  - Launched Provost's Post-doctoral Fellowship Program to diversify Penn State Post-docs and faculty
  - Launched high-DFW task force to address student persistence and close demographic achievement gaps
  - Elevated equity and inclusion expectations across Penn State, including the use of *Equity Moments* at the beginning of every leadership meeting and new faculty search guidelines
- ***Led Penn State College of Engineering (2017-2022)***
  - 13 academic departments
  - Over 400 faculty and 400 staff
  - Over 10,000 students at University Park and World Campus
  - ~$300 million in annual expenditures
  - Over $420 million endowment
  - Over 110,000 living alumni
- ***Organizational impact – College of Engineering***
  - Diversified College tenure-line faculty, nearly doubling the number who identify as African-American/Black, doubling the number identifying as Latino/a, and increasing the number of faculty who identify as female by over 75%
  - Grew College endowment by over $200 million, including one of the largest gifts in the College's history ($15.5 million) to establish the Clark Scholars Program
  - Grew College research expenditures and awards by over 50% over five years
  - Led development and implementation of College Strategic Plan, building on four cornerstone themes: *Excellence, Equity, Sustainability, and Social Mobility*
  - Led development and implementation of College Facilities Master Plan, leading to two new buildings providing 395,000 square feet of new academic, research and student support space, transforming the College's footprint on campus. The $313 million projects are on-mission, on-time and under budget.
  - Led transformation of the College Promotion and Tenure Criteria using an open-source process engaging all College tenure-line faculty. The new criteria focus on faculty impact and motivate faculty to focus on their impact and to aim for the highest levels of achievement.
  - Led College rebranding and transformation of marketing and communications, focusing our attention on engineering's role in impacting the world through university-wide multidisciplinary research and education
  - Led successful ABET accreditation with 19 programs and no shortcomings or weaknesses
  - Led tenure-line faculty co-hiring initiatives, including co-hires with the Applied Research Laboratory, School of International Affairs, Penn State Law, and between various departments in the College of Engineering. These initiatives establish the College of Engineering as a campus-wide leader while reducing barriers to inter-college faculty collaborations.
- ***Engineering Equity Initiative***
  - Led the development and implementation of a College-wide Equity Action Plan, a holistic effort targeting significant and sustainable changes in College culture and demographics through cultural transformations and operational modalities, including alignment with new College

promotion and tenure criteria and creating a broad definition of inclusion that goes beyond traditional minoritized groups in engineering
  - Created and successfully recruited new Associate Dean for Equity and Inclusion position, as a tenured role, elevating the importance of E&I to the highest level within the College
  - Diversified college leadership with first African-American Associate Dean, first Latino Department Head, first Latino Assistant Dean, first LGBTQ+ Department Head
  - Transformed college leadership and faculty hiring processes and protocols; established one of the most diverse and inclusive leadership teams of any R1 college of engineering in the U.S.
  - Led Penn State into the Partnership for Faculty Diversity program, creating a pipeline of post-doctoral researchers from minoritized groups and mentoring them to tenure-line faculty careers
  - Launched equity-centric faculty search process, resulting in expanded diversity in our faculty applicant pool and significant increased success in underrepresented faculty recruitment
  - Created *Impact Scholars* program, transforming our scholarship awarding protocols, significantly improving female and under-represented minority yield
  - Created Allies program to engage entire college population as equity partners
- ***Clark Scholars Program***
  - Secured $25 million endowment ($15 million gift from the A. James and Alice B. Clark Foundation and $10 million from Penn State) to support 40 full-time undergraduate students
  - Clark Scholars are a visible, cohesive cohort who have shown a drive to succeed academically and a willingness to seize opportunities in their lives and their schooling.
- ***Interdisciplinary initiatives***
  - Co-created *Law, Policy and Engineering Initiative*, bringing together faculty from the College of Engineering, Penn State Law, and Penn State School of International Affairs
    - Developed integrative academic degree programs for undergraduate, graduate and professional students, including Master's of Engineering in Engineering, Law and Policy, and multiple Integrated Undergraduate-Graduate degree programs with the School of International Affairs
    - Establish research and scholarly collaborations across engineering disciplines
  - Led partnership with the United Nations to renew and expand the *Global Building Network*
  - Expanded Center for Neuroengineering in partnership with the Huck Institutes for Life Science
  - Strengthened relationships with College of Medicine, College of Health and Human Development, and Eberly College of Science through multiple, strategic faculty co-hires
  - Launched Project Drawdown-Penn State Partnership
  - Launched College of Engineering Sustainability Council as part of the Penn State Sustainability Institute campus-wide initiative
- ***College undergraduate success initiatives and transformations***
  - Transitioned entrance-to-major from four semesters to two semesters
  - Launched "Exposure to Major" Initiative, including video content to inform students and parents of high school and early-career undergraduate students about the impact of engineering disciplines
  - Launched Engineering Connect pilot program with an aim to address the largest obstacles to success for incoming engineering undergraduates at University Park and the Commonwealth Campuses throughout their first year
  - Initiated Return to Intern internships program to serve international undergraduate students
  - Launched transformation of 1st/2nd year engineering curriculum
    - Engage all engineering students in hands-on engineering design
    - Expose all engineering students to the breadth of the engineering discipline
    - Infuse equity, diversity and inclusion into undergraduate curricula
- ***College research growth initiatives and transformations***
  - Launched seed grant programs to

        - Re-engage mid-career faculty with low research output
        - Encourage highly successful faculty to expand into higher-risk, higher-payoff areas
        - Encourage faculty to pursue large interdisciplinary research centers such as the NSF ERC and STC programs
        - Increase collaborations with the College of Medicine
        - Increase interdisciplinary research
        - Advance commercialization of faculty IP towards commercialization
    - Established processes to quantify seed grant return-on-investment
    - Restructured College's Corporate and Industry Engagement
        - Concierge relationship-building to support research, philanthropy and career services
        - Expanded College Industry and Professional Advisory Committees via matrix structure to continue department-centric committees while also engaging in college-wide initiatives
    - Launched and seeded new interdisciplinary research centers/consortia
        - Consortium on Integrated Energy Systems
        - Center for Radar Engineering, Science, and Technology
        - Center for Gas Turbine Research, Education, and Outreach
        - Center for Biodevices
        - Center for Artificial Intelligence Foundations and Engineered Systems
        - Center for Neurotechnology in Mental Health Research
- ***College commitment to defense research, development, and education***
    - Created and hired inaugural College of Engineering Defense Liaison position
    - Reinvigorated College relationship with the Applied Research Laboratory
        - Launched new tenure-line faculty co-hire program and recruited two new tenured faculty
        - Growing collaborative research
        - Streamlining Affiliate status and graduate standing in CoE for ARL faculty
- ***University service***
    - Global Academic Leadership Council
    - Chair, Council of Academic Deans (2020-22)
    - Strategic Budget Task Force
    - Executive Committee, Institutes for Energy and the Environment
    - Executive Committee, Huck Institutes for Life Science
    - Executive Committee, Institute for Computational and Data Sciences
    - Chair, Senior Vice President for Research Search Committee
    - Academic Leadership Forum Planning Committee
    - Corporate Relations Committee
    - Conflict of Interest Committee

<u>North Carolina State University</u>

- Lead NCSU MSE department of 28 FTE tenure/tenure-track faculty, 35 technical and non-technical staff, and ~300 students
- Grew NCSU MSE faculty by 47%, including significant diversification
    - Fourteen tenured/tenure-track faculty additions (74% success rate)
    - Eleven successful retentions of faculty with outside offers (100% success rate)
    - Increased under represented group faculty from 10% to 30%
    - Six Assistant Professors combined to win eight NSF CAREER and DoD YIP awards
- Grew graduate program by 95% while increasing student quality and percentage of domestic students
- Grew undergraduate program by 200%, while increasing female population to >30%
- Improved graduate program ranking from 31 to 15

- Improved undergraduate program ranking from >25 to 16
- Grew departmental endowment by >100%
- Grew research awards and expenditures over 100% over four years
- Co-led inter-college Cluster Hire in Carbon Electronics
- Established Distinguished Lecture Series; hosted speakers including John Cahn and Mildred Dresselhaus
- Launched new M.S. Nano Engineering program
- Successfully led ABET review, receiving full accreditation
- Expanded undergraduate program to include a biomaterials concentration; nanomaterials concentration currently under development
- Revamped undergraduate laboratories into a departmental "showpiece"
- Led the Analytical Instrumentation Facility, a shared user facility with 10 FTE staff, through an organizational transition
- Expanded NCSU AIF capabilities with over $6 million in new equipment acquired with federal, state and university funds

Florida State University

- Led Cluster Hire Initiative in Materials Processing, Growth and Characterization, a multidisciplinary initiative that added four new faculty members specializing in materials research; two of the four hired are female. New faculty hired with appointments in Physics, Chemical Engineering, Mechanical Engineering and Industrial Engineering
- Led initiative with NHMFL educators and high school teachers to develop and implement a secondary school curriculum in superconductivity

AWARDS AND HONORS

- Distinguished Alumni Award, University of Illinois Urbana-Champaign, Department of Nuclear, Plasma, and Radiological Engineering, 2024
- National Academy of Inventors, 2023
- Keynote Speaker, Enniscorthy Forum High Performance Building Initiative Symposium, Impact Strategies for the United Nations High Performance Building Initiative, 2022 Clean Energy Ministerial, 2022
- Academic Ally Award, Impact.Engineered, ASME, 2021
- John Bardeen Award, TMS Functional Materials Division, 2018
- Commencement Speaker, Penn State University Graduate College, May 2018
- Douglas D. Osherhoff Distinguished Lecturer, Universidad Autonoma Cuidad Juarez, Instituto De Ingenieria Y Tecnologia, Mexico, November 2017
- Plenary Speaker, IEEE International Conference on Applied Superconductivity and Electromagnetic Devices, Shanghai, China, 2015
- Fellow, ASM International, "For the advancement of high temperature superconductors and their applications as well as supporting the fledgling superconducting materials technology industrial base, and for advancing diversity in materials science and engineering," 2015
- Fellow, American Association for the Advancement of Science (AAAS), "For distinguished contributions to the field of applied superconductivity, particularly for the advancement of high magnetic fields and for the integration of experiment and computation," 2015
- IEEE Council on Superconductivity Award for Significant and Sustained Contributions to Applied Superconductivity, 2014 (highest award from the IEEE Council)
- 2013 Van Duzer Prize, for best paper in the *IEEE Transactions on Applied Superconductivity*, IEEE Council on Applied Superconductivity (awarded in 2014)

- 2012 Van Duzer Prize, for best paper in the *IEEE Transactions on Applied Superconductivity*, IEEE Council on Applied Superconductivity (awarded in 2014)
- NCSU Alumni Association Outstanding Research Award for 2012-13 (awarded in 2014)
- Papers selected as a *Superconductor Science & Technology* Highlight six times from 2013-2016
- Plenary Speaker, IEEE International Conference on Applied Superconductivity and Electromagnetic Devices, Beijing, China, 2013
- North Carolina State University Diversity Award, 2011
- Plenary Speaker, 20th International Conference on Magnet Technology (IEEE Conference), 2007
- Special Award for Exceptional Service, FAMU - FSU College of Engineering, 2007
- Engineering Research Award, FAMU - FSU College of Engineering, 2005
- Fellow, IEEE, "for contributions to high temperature superconductors and magnet systems," 2004; one of youngest Fellows in IEEE history
- Engineering Research Award, FAMU - FSU College of Engineering, 2001
- Plenary Speaker, Korean Superconductivity Society, KSS2000, South Korea, 2000
- Roger W. Boom Award, Cryogenic Society of America, 1998
- Developing Scholar Award, Florida State University, 1996
- Nuclear Engineering Students Award for Undergraduate Teaching, 1991
- NSF/Science and Technology Agency of Japan/JSPS Fellowship, 1990
- Magnetic Fusion Energy Technology Fellowship, U.S. Department of Energy, 1985-1990

PROFESSIONAL SERVICE ACTIVITIES - EXTERNAL

- Invited panelist, United Nations Economic Commission for Europe Cyber Monday Virtual Panel on High Performance Buildings, April 2021
- Invited panelist, MIT Forum for Equity: Equity in Engineering Education, February 2021
- Co-leading Big10+ Deans effort to infuse equity and inclusion in engineering curricula via collaboration with ABET and ASEE, 2020-2022
- Member, National Academy Defense Science Deans' Roundtable Linking Academic Engineering Research and Defense Basic Science, 2019-2022
- ASEE International Committee, 2019 - 2022
- Advisor, Project Drawdown, 2018 - 2020
- Department reviewer, Dept. of Materials Science and Engineering, University of Virginia, 2021
- Department reviewer, Dept. of Materials Science and Engineering, University of Central FL, 2019
- Department reviewer, Dept. of Materials Science and Engineering, University of Florida, 2016-2017
- Invited Speaker and Panelist, TMS Diversity Summit, 2016
- Advisory Board, *Superconductor Science & Technology*, 2015-2018
- Scientific Program Committee, International Conference on Magnet Technology, Korea, 2015
- Invited Panelist, Symposium on "The Future of Materials Science and Engineering: An Industry Perspective," Georgia Tech, May 2013
- Board of Visitors, Army Research Office, Materials Science Division, May 2013; Chair, May 2015
- Chair, Graduate Program Review, Dept. of Materials Science and Engineering, Virginia Tech, 2013
- Chair, Workshop on Ethnic Diversity in Materials Science & Engineering, December 2012
- CERN, Academic Training Instructor on Applied Superconductivity, June 2012
- Advisory Board member, Department of Materials Science and Engineering, Virginia Tech, 2012-2016
- University Materials Council
  - Executive Committee, Elected At-large member, 2011-2013

  - Vice-Chair, 2013-2014
  - Chair, 2014-2015
  - Gender Equity Committee, 2010 – 2017
- IEEE
  - Council on Superconductivity, Fellows Committee, Vice-Chair, 2013-2014; Chair, 2015-2018
  - Editor-In-Chief, *IEEE Transactions on Applied Superconductivity*, 2005 – 2012
  - International Steering Committee, 2015 ASEMD
  - Associate Editor, IEEE Technology News, 2010 – 2012
  - Council on Applied Superconductivity, Fellow Review Committee, 2011 – 2013
  - Representative of the Council on Superconductivity to the Board of Trustees of the Federation of Materials Societies, 2007 – 2011
  - Editor for Magnets and Magnet Applications, *IEEE Transactions on Applied Superconductivity*, 1998 – 2005
  - Member of the Council on Applied Superconductivity Executive Committee, 1998 – *present*
  - Chair, Van Duzer Prize Selection Committee, 2006 – 2012
  - Technical Committee on Electronic Publishing, 2000–2002
  - Distinguished Lecturer Committee (Chair), 2001–2002
- Applied Superconductivity Conference, Incorporated (a 501(c)(3))
  - Chairman of the Board and Conference Chairman, 2002–2004
  - Board of Directors Executive Committee, 1999–2004
  - Board of Directors, 1996 - 2008
- Materials Research Society
  - MRS Medal Selection Committee, 2014 – 2018
  - Broadening Participation Subcommittee, 2015– 2018
  - Co-Chair, Acta Materialia Gold Medal Forum: Frontiers in Thin-Film Epitaxy and Nanostructured Materials, 2011 Spring Meeting
  - Editor, Journal of Materials Research, Focus Issue: Frontiers in Thin-Film Epitaxy and Nanostructured Materials, 2013
- MS&T 2011, co-Chair, Acta Materialia Gold Medal Symposium, Columbus, Ohio, USA, October 16-20, 2011
- ASM Honorary Membership Committee, 2009 – 2011
- International Advisory Board, 6th International Conference "Science and Engineering of Novel Superconductors" of the 5th Forum on New Materials
- Review Panel Member, Naval Research Laboratory, Advanced Functional Oxides, 2007
- European Conference on Applied Superconductivity
  - International Advisory Board, 2012 - 2013
  - Board of Directors, 2002 - 2008
- Review Panel Member, Director's Review of the Fermilab High Field Superconducting Magnet Program, 2006
- U.S.-Japan Workshop on High-T_c Superconductors
  - Chair, U.S. Delegation, 1996-1999; Workshop Chair, 1997; Proceedings Editor, 1997
- International Advisor to the 2007 International Conference on Magneto Science
- Manuscript reviewer for *Nature Communications, Journal of Applied Physics*, *Applied Physics Letters*, *Journal of Materials Research, Superconductor Science and Technology*, *Journal of Physics and Chemistry of Solids*, *Physica C*, *Advanced Materials*, *IEEE Transactions on Vehicular Technology, Journal of Physics D: Applied Physics, IEEE Transactions on Applied Superconductivity, IEEE Transactions on Magnetics, Cryogenics*
- Proposal reviewer for the National Science Foundation, U.S. Department of Energy, ARPA-E

PROFESSIONAL SERVICE ACTIVITIES – NCSU AND FSU

- Women and Minority Engineering Programs National Advisory Board, NCSU College of Engineering, 2017
- Eastman Chemical Center of Excellence Research Steering Team, 2012 - 2017
- Reactor Safety and Audit Committee, 2012-2017
- Council on the Status of Women, 2011-14
- Biomedical Engineering Graduate Program Review Committee, 2011
- Vice Chancellor's Task Force on Shared Facilities for Materials Research, 2010-12
- Physical Environment Committee, 2010-12
- Led FSU Cluster Hire Initiative in Materials Processing, Growth and Characterization, 2006- 2009
- FSU GAP Committee, 2005-2009
- NHMFL Fellowship Committee, 2004–2005
- Panel Member, Council on Research and Creativity Grant Writing Workshop, 2004
- Mechanical Engineering Faculty Search Committee, 2002-2003; Co-chair 2003–2004
- Co-Chair, Magnet Science & Technology Steering Committee, 2003
- Magnet Science & Technology Director Search Committee, 2003
- Co-Chair, Committee on Expanding Corporate Research Support, 2002–2003
- Liaison on research to the Mechanical Engineering Advisory Committee, 2002–2004
- Chair, Center for Advanced Power Systems Research Committee, 2002–2004
- Center for Advanced Power Systems Budget Committee, 2002–2003
- FSU Promotion & Tenure Committee, 2002–2003; 2003–2004
- College of Engineering Promotion & Tenure Committee, 2002–2003; 2003–2004 (chair)
- Senior Research Advisor to the Vice President for Research, 2001-02
- Council on Research and Creativity, 1997–2000; 2001–2002
- Biomedical Activities Committee, 2001–2003
- Committee on Future Research Directions, 2001–2002
- FSU representative on the Southeast University Research Association, Council on Materials Science and Engineering, 1994–1997

RESEARCH AND GRADUATE ADVISING ACCOMPLISHMENTS

Professor Schwartz's primary research focus is on the underlying science that drive performance and system integration of superconducting magnets, optical fiber distributed sensors, and magnetic and multiferroic materials. His research focuses on system-issues that advance new discoveries into viable new technologies and is thus cross-disciplinary, integrating physics and chemistry of novel materials with mechanical, electrical, magnetic, thermal, and systems issues. His research has impact on systems important to defense, energy, medicine, and basic science.

Some specific research accomplishments include:

- Established world record for highest magnetic field generated by a superconducting magnet
- First to use magnetic fields to texture oxides during thermal processing
- Recognized world leader in understanding quench behavior in high temperature superconductors

- First to quantify slow normal zone propagation in HTS conductors and quench-induced failure
- First to develop experimentally validated, multiscale, quench model that links microstructural behaviors to macroscopic behavior and conditions
- First to identify thermally-conducting electrical insulator as key to enhanced quench protection; worked closely with small business to effectively develop such an insulator
- First to identify and develop Rayleigh-scattering interrogated optical fibers (RIOF) as sensors for quench detection. RIOF is now recognized as the best option for protecting HTS magnets.

- Coupled mechano-thermo-electro-magneto failure issues that limit performance & lifetime
  - Developed real-time imaging of crack initiation and propagation, and its relationship to quench propagation, via magneto-optical imaging
  - First to identify axial compression failure mode in $Bi_2Sr_2Ca_2Cu_3O_z$ superconducting tapes
  - First to explain microstructural causes of quench-induced failure in HTS conductors
- Tailoring defects and structure to enhance functional properties
  - First to incorporate carbon nanotubes and oxide nanoparticles into a ceramic matrix
  - First to irradiate doped $Bi_2Sr_2CaCu_2O_x$ and $HgBa_2CuO_x$ superconductors for controlled defects and enhanced magnetic flux pinning
- Advanced oxide thin film heterostructures
  - First to use chemical solution deposition to achieve $NiFe_2O_4$ films with random orientation, uniaxial texture and epitaxy, with properties as good or better than vacuum-deposited films

RESEARCH FUNDING

Professor Schwartz has received over $23 million in research funding from the U.S. Army, Navy, Air Force, Department of Energy, ARPA-E, National Science Foundation, National Institutes for Health, and from industry.

RESEARCH AND SCHOLARLY PRODUCTS

Patent activities

Issued

1. J. Schwartz, T. Asano, H. Sekine, D.R. Dietderich, K. Inoue and H. Maeda, "Wire-in-tube process for bismuth system superconductors," Patent Agency of Japan #2272159, 1990
2. J. Schwartz, Ch. Wolters, and K.M. Amm, "Process for preparing mercury-barium-calcium-copper-oxide-based superconductor materials," U.S. Patent Office, patent #5,858,926, issued January 12, 1999
3. J. Schwartz, C.C. Koch, Y. Zhang and X.T. Liu, "Formation of bismuth strontium calcium copper oxide superconductors," U.S. patent 9,773,962 B2, September 26, 2017.
4. W.K. Chan, Y. Wang, H. Song, and Justin Schwartz, "Hypersonic aircraft having homopolar motor with graded resistance," U.S. patent 10,507,913, December 17, 2019; "Aéronef hypersonique à moteur homopolaire à résistance progressive," international patent WO2017218801A1 published December 21, 2017.
5. T. Kittel and J. Schwartz, "Ferrite thick films and the chemical solution based methods of preparation thereof," U.S. patent 10,577,253, March 3, 2020.
6. F. Scurti and J. Schwartz, "Self-monitoring superconducting cables having integrated optical fibers," U.S. patent 10,593,444, March 17, 2020.
7. J. Schwartz, F. Scurti, S. Rogers and W.K. Chan, "Self-monitoring superconducting tape via integrated optical fibers," U.S. patent 10,892,397, January 12, 2021.

Pending

1. F. Scurti and J. Schwartz, "Enhanced optical fibers for low temperature sensing," U.S. patent application filed April 23, 2020. US Patent App. 16/067,938, 2020
2. F. Scurti and J. Schwartz, "Dynamic management of superconducting magnets," U.S. patent application filed December 28, 2023, PCT/US23/86208.

Book Chapters

1. J. Schwartz and H.W. Weijers, *Electrical Measurements on Superconductors by Transport* in Methods in Materials Research, Ed. by E. N. Kaufmann *et al.* (John Wiley & Sons, New York, 2000) pp. 5b.5.1 - 5b.5.20
2. J. Schwartz and P.V.P.S.S. Sastry, *Emerging Materials: Hg Superconductors*, Handbook of Superconducting Materials, Volume I, Part C, Chapter C4. Ed. By D.A. Cardwell and D.S. Ginley (Institute of Physics Publishing, Bristol, UK, 2003) pp. 1029-1048.
3. H.W. Weijers, P. Noyes and J. Schwartz, *Electrical Measurements on Superconductors by Transport* in Characterization of Materials Research, Ed. by E. N. Kaufmann *et al.* (John Wiley & Sons, New York, 2012) Revised Edition, pp. 616-636.
4. R. Jha, G. S. Dulikravich, M.J. Colaco, M. Fan, J. Schwartz, and C. Koch, "Magnetic Alloys Design Using Multi-Objective Optimization", Advanced Structured Materials series (eds.: Oechsner, A., da Silva, L.M., Altenbach, H.), Springer, Germany http://www.springer.com/series/8611.

Educational Materials/Curricula

1. G.C. LaFrazza, J. Schwartz, S. Pamidi, U.P. Trociewitz, L. Ford and M. Johnson, *Project Superconductivity* (2004); Italian (2004) and German translations (2005)

   A high school curriculum package comprised of a thirteen-activity teacher guidebook and a package of manipulatives with which to conduct the activities. The first English version was completed in October 2004 and was translated into Italian and German in 2005.

Commentaries and Viewpoints

1. J. Schwartz, "Viewpoint: Are no-insulation magnets a paradigm shift for high-field DC superconducting magnets?" *Superconductor Science & Technology* **29** 050501 (2 pp) doi 10.1088/0953-2048/29/5/050501 (2016)
2. T. Richard and J. Schwartz, "Universities must lead on climate solutions", triblive.com (2019)

Peer-Reviewed Journal Publications

1988 – 1990

1. D.R. Cohn, J. Schwartz, L. Bromberg and J.E.C. Williams, "Tokamak Reactor Concepts Using High Temperature, High Field Superconductors," *Journal of Fusion Energy* **7**(6), 91-94 (1988)
2. J. Schwartz, L. Bromberg, D.R. Cohn and J.E.C. Williams, "Performance Limits of High Field Tokamak Reactors," *Nuclear Fusion* **29**(6), 983-988 (1989)
3. J. Schwartz, J.E.C. Williams, L. Bromberg and D.R. Cohn, "A Commercial Tokamak Reactor Using Super High Field Superconducting Magnets," *Fusion Technology* **15**(2), 957-964 (1989)
4. L. Bromberg, R.C. Myer, D.R. Cohn, J. Schwartz and J.E.C. Williams, "Prospects for a High Field ITER Device," *Journal of Fusion Energy* **9**(4), 507-511 (1990)

1991 – 1995

5. J. Schwartz, J.P. Freidberg and J.E.C. Williams, "Dynamic Stability of Edge-Cooled Superconducting Tapes," *Cryogenics* **31**(l), 21-32 (1991)

6. J. Schwartz, L. Bromberg, D.R. Cohn and J.E.C. Williams, "A 24 Tesla Superconducting Toroidal Field Magnet Concept For A Commercial Tokamak Reactor," *IEEE Transactions on Magnetics* **27**(2), 2068-2071 (1991)
7. J. Schwartz, J.P. Freidberg and J.E.C. Williams, "Numerical and Analytical Solutions for the Dynamic Stability of Edge Cooled Superconducting Tapes Using Two Dimensional Variational Principles," *IEEE Transactions on Magnetics* **27**(2), 2120-2123 (1991)
8. J. Schwartz, H. Sekine, T. Asano, T. Kuroda, K. Inoue and H. Maeda, "Fabrication, Current Density and Strain Dependence of Sintered, Ag-Sheathed Bi-Sr-Ca-Cu-0 (2212) Single Filament and Multifilamentary Tape Superconductors," *IEEE Transactions on Magnetics* **27**(2), 1247-1249 (1991)
9. J. Schwartz, L. Bromberg, D.R. Cohn, J.H. Schultz and J.E.C. Williams, "Superconducting Magnet Development Requirements for Commercial High Field Tokamaks," *Fusion Technology* **19**(3, pt.2A), 830-835 (1991)
10. H. Sekine, J. Schwartz, T. Kuroda, K. Inoue, H. Maeda, K. Numata and H. Yamamoto, "Comparison of Bi-system 2223 and 2212 Thick Superconducting Tapes: Grain Alignment, Current Density and Strain Effects," *Journal of Applied Physics* **70**(3), 1596-1599 (1991)
11. J. Schwartz and S. Wu, "Properties of Li-Doped, Polycrystalline, Melt-Textured, Bi-Sr-Ca-Cu-O Tapes Prepared by Powder-in-Tube Processing," *Physica C* **185-189**, 2403-2404 (1991)
12. J. Schwartz and S. Wu, "Effects of Lithium Doping on the Formation and Microstructure of Bulk Bi-Sr-Ca-Cu-O," *Physica C* **190**, 169-171 (1991)
13. J. Schwartz, "A Novel Superconducting Toroidal Field Magnet Concept Using Advanced Materials," *Journal of Fusion Energy* **11**(l), 19-37 (1992)
14. J. Schwartz and E.E. Burkhardt, "An Investigation of Superconducting Magnets for a 10 MWh SMES," *IEEE Transactions on Applied Superconductivity* **2**(4), 195-204 (1992)
15. S. Wu, J. Schwartz, J.C. Rynes and C.A. Gianino, "Optimization of Processing Conditions for Bulk Ceramic Li Doped BSCCO," *Applied Superconductivity* **1**(1/2), 93-99 (1993)
16. J. Schwartz and S. Wu, "Enhanced Flux-Line Pinning in $Bi_2Sr_2CaCu_2O_x$ by Neutron Irradiation and Li(n,^{3}T)α Reaction-Induced Charged-Particle Defects," *Journal of Applied Physics* **73**(3), 1343-1347 (1993)
17. E.A. Scholle and J. Schwartz, "MPZ Stability Under Time-Dependent, Spatially Varying Heat Loads," *IEEE Transactions on Applied Superconductivity* **3**(1), 421-424 (1993)
18. E.E. Burkhardt and J. Schwartz, "Analysis of Superconducting Magnet (SCM) - Ground Coil Interactions for EDS Maglev Coil Configurations," *IEEE Transactions on Applied Superconductivity* **3**(l), 430-433 (1993)
19. J. Schwartz, S. Wu, G.W. Raban Jr. and J.C. Rynes, "On the Evolution of Phases in Polycrystalline Li-doped 2212 BSCCO and Enhanced Superconducting Behaviour Via n(Li, α)T Reactions," *IEEE Transactions on Applied Superconductivity* **3**(1), 1652-1658 (1993)
20. S. Wu, J. Schwartz and G.W. Raban, "Effects of Varying Initial Bi Stoichiometry on Phase Formation of Partial Melt-Processed $Bi_2Sr_2CaCu_2O_x$," *Physica C* **213***,* 483-489 (1993)
21. K.C. Goretta, C.-T. Wu, M.T. Lanagan, R.B. Poeppel, J. Schwartz and S. Wu, "Pure and Lithium-Doped $Bi_2Sr_2CaCu_2O_x$ Silver-Clad Tapes," *Journal of Electronic Materials* **22**(10), 1289-1294 (1993)
22. J. Schwartz, S. Nakamae, G.W. Raban Jr., J.K. Heuer, S. Wu, J.L. Wagner and D.G. Hinks, "Large Critical Current Density in Neutron-Irradiated Polycrystalline $HgBa_2CuO_{4+\delta}$," *Physical Review B - Rapid Communications* **48**(13), 9932-9934 (1993)
23. J. Schwartz, J.K. Heuer, K.C. Goretta, R.B. Poeppel, J. Guo and G.W. Raban Jr., "High Temperature Mechanical Properties and High Strength Sheaths for Powder-in-Tube Tapes," *Applied Superconductivity* **2**(3/4), 271-280 (1994)

24. J.L. Hill, B.C. Amm and J. Schwartz, "An Analysis of Force-Reduced Toroidal Magnets," *IEEE Transactions on Magnetics* **30**(4), 2094-2097 (1994)
25. J. Guo, J. Schwartz, C.-T. Wu and K.C. Goretta, "Hot Rolling of Powder-in-Tube Li-Doped Bi(2212) Tapes," *IEEE Transactions on Magnetics* **30**(4), 2098-2101 (1994)
26. E.A. Scholle and J. Schwartz, "Power Dissipation Due to Vibration Induced Disturbances in *maglev* Superconducting Magnets," *IEEE Transactions on Applied Superconductivity* **4**(4), 205-210 (1994)
27. Y.R. Sun, J.R. Thompson, J. Schwartz, D.K. Christen, Y.C. Kim and M. Paranthaman, "Surface Barrier in Hg-Based Polycrystalline Superconductors," *Physical Review B* **51**(l), 581-588 (1995)
28. S. Wu, J. Schwartz and G.W. Raban, Jr., "Superconducting Properties and Microstructural Evolution of Li-Doped $Bi_2Sr_2CaCu_2O_x$," *Physica C* **246,** 297-308 (1995)
29. M. Turchinskaya, D.L. Kaiser, A.J. Shapiro and J. Schwartz, "Magnetic-Flux Penetration in Li-Doped $Bi_2Sr_2CaCu_2O_z$ Casted Tapes Before and After Fast Neutron Irradiation," *Physica C* **246,** 375-384 (1995)
30. E.E. Burkhardt, S. Nakamae and J. Schwartz, "Stability Models for High-T_c Superconducting Conductors," *IEEE Transactions on Applied Superconductivity* **5**(2), 393-396 (1995)
31. Ch. Wolters, K.M. Amm, Y.R. Sun and J. Schwartz, "Bulk Processing of HgBaCuO Compounds by a Two-Zone Technique," *IEEE Transactions on Applied Superconductivity* **5**(2), 1506-1509 (1995)
32. Y.R. Sun, K.M. Amm and J. Schwartz, "Flux Pinning and Magnetic Anisotropy in Neutron Irradiated Hg-Ba-Ca-Cu-O," *IEEE Transactions on Applied Superconductivity* **5**(2), 1870-1875 (1995)
33. K. Fossheim, E.D. Tuset, T.W. Ebbesen, M.M.J. Treacy and J. Schwartz, "Enhanced Flux Pinning in $Bi_2Sr_2CaCu_2O_x$ Superconductor with Embedded Carbon Nanotubes," *Physica C* **248**, 195-202 (1995)
34. W. Lechter, L. Toth, M. Osofsky, E. Skelton, R.J. Soulen Jr., S. Qadri, J. Schwartz, Ch. Wolters and J. Kessler, "One Step Reaction and Consolidation of Hg Based High Temperature Superconductors by Hot Isostatic Pressing," *Physica C* **249**, 213-219 (1995)
35. E.A. Scholle and J. Schwartz, "Thermal Stability of *MAGLEV* SCMs with Vibration-Induced Disturbances," *Applied Superconductivity* **3**(1-3), 169-174 (1995)
36. K.M. Amm and J. Schwartz, "Enhanced Flux Pinning in $HgBa_2CuO_x$ by Neutron Irradiation and its Relationship to Magnetic Anisotropy," *Journal of Applied Physics* **78**(4), 2575-2580 (1995)
37. J. Guo, J.A. Lewis, K.C. Goretta, and J. Schwartz, "Properties and Chemical Stability of Hot-Rolled Ag(7at.%Cu)-sheathed $Bi_2Sr_2Ca_{0.64}Cu_{1.64}O_x$ Powder-in-Tube Tapes*," Journal of Applied Physics* **78**(7), 4596-4607 (1995)
38. S. Gjolmesli, K. Fossheim, Y.R. Sun, and J. Schwartz, "Logarithmic Current Density Dependence on the Activation Barrier in Superconducting $HgBa_2CaCu_2O_{6+x}$," *Physical Review B* **52**(14), 10447-10451 (1995)

1996 – 2000

39. J. Schwartz, K.M. Amm, Y.R. Sun, and Ch. Wolters, "HgBaCaCuO Superconductors: Processing, Properties and Potential," *Physica B* **216,** 261-265 (1996)
40. Y.R. Sun and J. Schwartz, "Anisotropy Studies on Aligned $HgBa_2CaCu_2O_{6+\delta}$ Powder - Confirmation of the Collective Pinning Theory for Anisotropic Materials," *Physical Review B* **53**(9), 5830-5834 (1996)
41. S. Nakamae and J. Schwartz, "Magnetoresistivity of Ag Tape Co-Processed with $Bi_{1.4}Pb_{0.6}Sr_2Ca_2Cu_3O_x$ Superconductor," *Cryogenics* **36**(5), 395-397 (1996)
42. W.D. Markiewicz, I.R. Dixon, Y.M. Eyssa, J. Schwartz, C.A. Swenson, S.W. Van Sciver, and H.J. Schneider-Muntau, "25 T High Resolution NMR Magnet Program and Technology," *IEEE Transactions on Magnetics* **32**(4), 2586-2589 (1996)

43. K.C. Goretta, J.L. Routbort, R.L. Thayer, J.P. Carroll, J. Wolfenstine, J. Kessler, and J. Schwartz, "Deformation of Ag/1.2 at.% Mg," *Physica C* **265** 201-206 (1996)
44. Ch. Wolters, K.M. Amm, Y.R. Sun, and J. Schwartz, "Synthesis of (Hg,Re)$Ba_2Ca_{n-1}Cu_nO_y$ Superconductors," *Physica C* **267**, 164-172 (1996)
45. A. Bhargava, J. Schwartz, J.A. Alarco, I.D.R. Mackinnon, Y.R. Sun and T. Yamashita, "Progress Towards Slip-Casting of $YBa_2Cu_3O_{7-x}$ Monoliths," *Materials Letters* **30**, 199-208 (1997)
46. E.E. Burkhardt and J. Schwartz, "Three-Dimensional Numerical Analysis of the Stability of Ag/$Bi_2Sr_2Ca_2Cu_3O_x$ Tape Conductors," *IEEE Transactions on Applied Superconductivity* **7**(2), 199-202 (1997)
47. S. Boutemy, J. Kessler, and J. Schwartz, "React-Wind-and-Sinter Technique for $Bi_2Sr_2CaCu_2O_8$ High T_c Coils," *IEEE Transactions on Applied Superconductivity* **7**(2), 1552-1555 (1997)
48. W. Wei, Y.R. Sun, J. Schwartz, K. Goretta, U. Balachandran, and A. Bhargava, "Preparation and Properties of Nanosize TiO_2 and MgO-Doped $Bi_2Sr_2CaCu_2O_x$ Tapes," *IEEE Transactions on Applied Superconductivity* **7**(2), 1556-1559 (1997)
49. J. Kessler, S. Boutemy, S. Chen, D. Dimapilis, V. Miller, W. Wei and J. Schwartz, "Preparation of Dispersion-Hardened Single- and Multifilamentary $Bi_2Sr_2CaCu_2O_x$ Tapes and Wires," *IEEE Transactions on Applied Superconductivity* **7**(2), 1560-1563 (1997)
50. P.V. Shoaff Jr., Y.S. Hascicek, J. Schwartz and S.W. Van Sciver, "An Investigation of the Characterization and Development of HTS Joints in BSCCO 2212/Ag Composites," *IEEE Transactions on Applied Superconductivity* **7**(2), 1695-1698 (1997)
51. S. Nakamae and J. Schwartz, "Thermal Conductivity of $Bi_2Sr_2CaCu_2O_x$ Superconductors in High Magnetic Fields," *IEEE Transactions on Applied Superconductivity* **7**(2), 1699-1702 (1997)
52. K.M. Amm, Ch. Wolters, D.C. Knoll, S.C. Peterson, J. Schwartz, "Growth of $Hg_{0.9}Re_{0.1}Ba_2Ca_2Cu_3O_{8+x}$ on a Metallic Substrate," *IEEE Transactions on Applied Superconductivity* **7**(2), 1973-1976 (1997)
53. Ch. Wolters, K. Amm, D.C. Knoll, S.C. Peterson, and J. Schwartz, "Synthesis of Hg-Re-Ba-Ca-Cu-O Superconductors by a Two-step Method," *IEEE Transactions on Applied Superconductivity* **7**(2), 1977-1980 (1997)
54. J. Schwartz, B.C. Amm, H. Garmestani, D.K. Hilton, and Y. Hascicek, "Mechanical Properties and Strain Effects in $Bi_2Sr_2CaCu_2O_x$/AgMg Composite Conductors," *IEEE Transactions on Applied Superconductivity* **7**(2), 2038-2041 (1997)
55. S. Nakamae and J. Schwartz, "Magnetothermal Conductivity of $Bi_2Sr_2CaCu_2O_x$ Bulk Superconductor in High Magnetic Fields," *Journal of Applied Physics* **81**(2B), 4931-4933 (1997)
56. E.J. Gonzalez, W. Wong-Ng, G.J. Piermarini, Ch. Wolters, and J. Schwartz, "X-ray Diffraction Study of $HgBa_2CuO_{4+\delta}$ at High Pressures," *Powder Diffraction* **12**(2) 106-112 (1997)
57. P.V.P.S.S. Sastry, K.M. Amm, D.C. Knoll, S.C. Peterson, Ch. Wolters and J. Schwartz, "Synthesis of (HgX)$Ba_2Ca_2Cu_3O_x$ Superconductors," *Journal of Superconductivity* **11** 49-52 (1998)
58. K.M. Amm, P.V.P.S.S. Sastry, D.C. Knoll, S.C. Peterson, and J. Schwartz, "Effects of a Au Interface on (HgBi)$Ba_2Ca_2Cu_3O_x$ Superconductor," *Journal of Superconductivity* **11** 75-76 (1998)
59. P.V.P.S.S. Sastry, K.M. Amm, D.C. Knoll, S.C. Peterson, and J. Schwartz, "Synthesis and Processing of $(Hg,Pb)_1Ba_2Ca_2Cu_3O_y$ Superconductors," *Physica C* **297** 223-231 (1998)
60. W. Wei, J. Schwartz, K. Goretta, U. Balachandran, and A. Bhargava, "Effects of Nanosize MgO Additions to Bulk $Bi_{2.1}Sr_{1.7}CaCu_2O_x$," *Physica C* **298** 279-288 (1998)
61. P.V.P.S.S. Sastry, K.M. Amm, D.C. Knoll, S.C. Peterson, and J. Schwartz, "Synthesis and Processing of Bi-doped $Hg_1Ba_2Ca_2Cu_3O_y$ Superconductors," *Physica C* **300** 125-140 (1998)

62. S.C. Nakamae, J. Crow, J. Sarrao, and J. Schwartz, "Anisotropic Thermal Conductivity of c-axis Aligned $Bi_{2.1}Sr_{1.7}CaCu_2O_x$ Superconductor in High Magnetic Fields," *Journal of Applied Physics* 83(11) 6786-6788 (1998)
63. K.M. Amm, P.V.P.S.S. Sastry, D.C. Knoll, S.C. Peterson, and J. Schwartz, "The Influence of Metallic Interfaces on the Properties of $(Hg,Bi)Ba_2Ca_2Cu_3O_x$ Superconductors," *Superconductor Science & Technology* **11** 793-799 (1998)
64. Y. Tsabba, S. Reich, S. Nakamae, and J. Schwartz, "Magnetoresistance in Underdoped $HgBa_2Ca_2Cu_3O_8$ Films in High Magnetic Fields," *Physica C* **307** 237-240 (1998)
65. P.V.P.S.S. Sastry and J. Schwartz, "Synthesis and Processing of Doped $Hg_1Ba_2Ca_2Cu_3O_y$ Superconductor," *Journal of Superconductivity* **11**(5) 595-602 (1998)
66. A. Goto, T. Shimizu, P.V.P.S.S. Sastry, and J. Schwartz, "Magnetic scaling in the underdoped superconductor, $Hg_{0.8}Re_{0.2}Ba_2Ca_2Cu_3O_{8+x}$ studied by ^{63}Cu NMR," *Physical Review B* **59** 14269-14172 (1999)
67. E.E. Burkhardt and J. Schwartz, "Three dimensional stability analysis of high-temperature superconductors using the finite element method," *IEEE Transactions on Applied Superconductivity* **9**(2) 240-243 (1999)
68. H.W. Weijers, Q.Y. Hu, Y.S. Hascicek, A. Godeke, Y. Viouchkov, E. Celik, J. Schwartz, K. Marken, W. Dai, and J. Parrell, "Development of 3 T class Bi-2212 insert coils for high field NMR," *IEEE Transactions on Applied Superconductivity* **9**(2) 563-566 (1999)
69. P.V.P.S.S. Sastry and J. Schwartz, "Synthesis and Stability of HgRe1212 and HgRe1223 Superconductors," *IEEE Transactions on Applied Superconductivity* **9**(2) 1684-1687 (1999)
70. J.C. Moore, M.I. Bisset, D.C. Knoll, J. Marin, S. Peterson, P.V.P.S.S. Sastry, J. Schwartz, T.A. Gladstone, and C.R.M. Grovenor, "Effect of deposition method on the uniformity of Hg-1212 thick films," *IEEE Transactions on Applied Superconductivity* **9**(2) 1692-1695 (1999)
71. Y. Li, P.V.P.S.S. Sastry, D.C. Knoll, S.C. Peterson, and J. Schwartz, "Synthesis of HgPb1223 Superconductor," *IEEE Transactions on Applied Superconductivity* **9**(2) 1767-1770 (1999)
72. Q.Y. Hu, Y. Viouchkov, H.W. Weijers, and J. Schwartz, "Continuous processing of AgMg-sheathed $Bi_2Sr_2CaCu_2O_8$ tapes," *IEEE Transactions on Applied Superconductivity* **9**(2) 1808-1811 (1999)
73. U. P. Trociewitz, P.V.P.S.S. Sastry, P.R. Sahm, and J. Schwartz, "Flux pinning enhancement in Ag-clad Bi-2212 wires by reactive doping with barium peroxide," *IEEE Transactions on Applied Superconductivity* **9**(2) 1828-1831 (1999)
74. Q.Y. Hu, P.V.P.S.S. Sastry, U.P. Trociewitz, J. Schwartz, "Microstructure and Critical Currents in AgMg-Sheathed Multifilamentary $Bi_2Sr_2CaCu_2O_8$ Tapes," *IEEE Transactions on Applied Superconductivity* **9**(2) 1876-1879 (1999)
75. E. Celik, J. Schwartz, E. Avci, and Y.S. Hascicek, "Evaluation of adhesion strength of sol-gel-ceramic insulation for HTS magnets," *IEEE Transactions on Applied Superconductivity* **9**(2) 1916-1919 (1999)
76. E. Celik, J. Schwartz, E. Avci, and Y.S. Hascicek, "CeO_2 buffer layers for YBCO: growth and processing via sol-gel technique," *IEEE Transactions on Applied Superconductivity* **9**(2) 2264-2267 (1999)
77. S. Nakamae, J.E. Crow, and J. Schwartz, "Neutron irradiation effect on magnetization and thermal conductivity of $(Hg_x,Bi_{1-x})Ba_2Ca_2Cu_3O_y$ superconductor," *IEEE Transactions on Applied Superconductivity* **9**(2) 2300-2303 (1999)
78. W. D. Markiewicz, J. Schwartz, and H.J. Schneider-Muntau, "The approach to 1 GHz plus high resolution NMR," *IEEE Transactions on Applied Superconductivity* **10**(1) 724-727 (2000)
79. Y. Viouchkov, H.W. Weijers, and J. Schwartz, "Stress-strain effects in Bi-2212 superconductors," *IEEE Transactions on Applied Superconductivity* **10**(1) 1134-1137 (2000)

80. N.M. Hamdan, H. El-Ghanem, and J. Schwartz, "Effect of La^{3+} substitution for Sr^{2+} on the phase formation, structure and properties of $(Tl_{0.5}Pb_{0.5})Sr_2Ca_2Cu_3O_y$ compounds," *IEEE Transactions on Applied Superconductivity* **10**(1) 1174-1177 (2000)
81. P.V.P.S.S. Sastry, Y. Li, J. Su, and J. Schwartz, "Attempts to fabricate thick HgPb1223 superconducting films on silver," *Physica C* **335** 112-119 (2000)
82. N.M. Hamdan, P.V.P.S.S. Sastry, and J. Schwartz, "Enhancement of the phase formation and superconducting properties of HgRe1223 through fluorine addition," *Physica C* **341** 513-514 (2000)

2001 – 2005

83. U.P. Trociewitz, P.R. Sahm, R.E. Koritala, L. Brandao, C. Bacaltchuk, and J. Schwartz, "Microstructural development and superconducting properties of BaO_2-added $Bi_2Sr_2CaCu_2O_{8+x}$," *IEEE Transactions on Applied Superconductivity* **11**(1) 3054-3057 (2001)
84. Y. Viouchkov and J. Schwartz, "Compressive stress-strain-I_c properties of Bi-2223 superconducting tapes," *IEEE Transactions on Applied Superconductivity* **11**(1) 3062-3065 (2001)
85. P.V.P.S.S. Sastry, J. Su, S.L. Atwell, S.M. Durbin, and J. Schwartz, "Fabrication and characterization of $(HgRe)Ba_2Ca_1Cu_2O_y$ thin films," *IEEE Transactions on Applied Superconductivity* **11**(1) 3098-3101 (2001)
86. P.V.P.S.S. Sastry, Y. Viouchkov, R.G.L.Hodges, and J. Schwartz, "Fabrication of (HgRe)-Ba-Ca-Cu-O (1223) single phase fibers for current leads," *IEEE Transactions on Applied Superconductivity* **11**(1) 3110-3113 (2001)
87. J. Su, P.V.P.S.S. Sastry, and J. Schwartz, "Growth of $Hg_{0.8}Pb_{0.2}Ba_2Ca_2Cu_3O_{8+}$ thick films on Ag using a modified process route," *IEEE Transactions on Applied Superconductivity* **11**(1) 3118-3121 (2001)
88. E. Celik, H. Okuyucu, I.H. Mutlu, M. Tomsic, J. Schwartz, and Y.S. Hascicek, "Textured $La_2Zr_2O_7$, Gd_2O_3, and Er_2O_3 buffer layers for long-length YBCO coated conductors by non-vacuum process," *IEEE Transactions on Applied Superconductivity* **11**(1) 3162-3165 (2001)
89. D. van der Laan, H.J.N. van Eck, B. ten Haken, H.H.J. ten Kate, and J. Schwartz, "Temperature and magnetic field dependence of the critical current of $Bi_2Sr_2Ca_2Cu_3O_x$ tape conductors" *IEEE Transactions on Applied Superconductivity* **11**(1) 3345-3348 (2001)
90. H.W. Weijers, B. ten Haken, and J. Schwartz, "Critical currents in Bi-Sr-Ca-Cu-O superconductors up to 33 T at 4.2 K," *IEEE Transactions on Applied Superconductivity* **11**(1) 3956-3959 (2001)
91. H.W. Weijers, J.M. Yoo, B. ten Haken, and J. Schwartz, "Bi-Sr-Ca-Cu-O conductors and magnets at high stress-strain levels," *Physica C* **357-360** 1160-1164 (2001)
92. J.H. Su, P.V.P.S.S. Sastry, and J. Schwartz, "Synthesis and characterization of $(Hg_{0.8}Re_{0.2})Ba_2CaCu_2O_{6+}$ thick films on Ag obtained by a two-step dip-coating/rolling method," *Physica C* **361** 292-299 (2001)
93. U.P. Trociewitz, P.R. Sahm, R.E. Koritala, L. Brandao, C. Bacaltchuk, and J. Schwartz, "The influence of BaO_2 additions on microstructure and superconducting properties of $Bi_2Sr_2CaCu_2O_{8+}$," *Physica C* **366** 80-92 (2002)
94. J.H. Liversage, M.J.R. Hoch, J.M. Keartland, W.G. Moulton, J. Schwartz, and P.V.P.S.S. Sastry, "NMR shift behavior for the planar Cu(1) site in the underdoped superconductor $Hg_{0.8}Ba_2Ca_2Cu_3O_{8.3}$," *Physical Review B* **65** 65-68 (2002)
95. J.H. Su, S.L. Atwell, O. Castillo, S.M Durbin, P.A. Salvador, P.V.P.S.S. Sastry, and J. Schwartz, "Growth of superconducting $(Hg,Re)Ba_2CaCu_2O_y$ thin films on Ag by pulsed laser deposition," *Physica C* **372-376** 782-785 (2002)
96. U.P. Trociewitz, H.J.N van Eck, S.H. Thompson, A. Mbaruku, H. Weijers, J. Schwartz, "HTS conductor characterization at 27 K," *Physica C* **372-376** 974-976 (2002)

97. D.C. van der Laan, M.W. Davidson, B. ten Haken, H.H.J. ten Kate, and J. Schwartz, "Magneto-Optical Imaging study of the crack formation in superconducting tapes caused by applied strain," *Physica C* **372-376** 1020-1023 (2002)
98. D.C. van der Laan, H.J.N. van Eck, B. ten Haken, J. Schwartz and H.H.J. ten Kate, "Interpretation of the critical current in $Bi_2Sr_2Ca_2Cu_3O_x$ tape conductors as parallel weak-link and strong-link paths," *Physica C* **372-376** 1024-1027 (2002)
99. H. W. Weijers, J. Schwartz, and B. ten Haken, "Bi-based HTS insert coils at high stress levels," *Physica C* **372-376** 1364-1367 (2002)
100. A. Goto, W.G. Clark, P. Vonlanthen, K.B. Tanaka, T. Shimizu, K. Hashi, P.V.P.S.S. Sastry and J. Schwartz, "Origin of the enhanced copper spin echo decay rate in the pseudogap regime of the multilayer high-T_c cuprates," *Physical Review Letters* **89**(12) 127002-1:4 (2002)
101. H. Maeda, K. Ooya, M. Sato, W.P, Chen, K. Watanabe, M. Motokawa, A. Matsumoto, H. Kumakura, and J. Schwartz, "Microstructure and critical current density of Bi2212 tapes grown by magnetic melt-processing" *Physica C* **382**(1) 33-37 (2002)
102. N.M. Hamdan, P.V.P.S.S. Sastry, and J. Schwartz, "Magnetic Properties of Fluorinated Pb-doped Hg-1223 High T_c Superconductors," *IEEE Transactions on Applied Superconductivity* **12**(1) 1132-1135 (2002)
103. H. Maeda, P.V.P.S.S. Sastry, U.P. Trociewitz, J. Schwartz, K. Ohya, M. Sato, W.P. Chen, K. Watanabe, and M. Motokawa, "Effect of magnetic field strength in melt-processing on texture development and critical current density of Bi-oxide superconductors," *Physica C* **386** 115-121 (2003)
104. J.H. Su, P.V.P.S.S. Sastry, and J. Schwartz, "Fabrication and morphology of (Hg,Re)-1212 thin films on $LaAlO_3$," *Physica C* **386** 309-313 (2003)
105. F. Trillaud, H. Palanki, U.P. Trociewitz, S.H. Thompson, H. W. Weijers, J. Schwartz, "Normal Zone Propagation Experiments on High Temperature Superconductor Composite Conductors," *Cryogenics* **43**(3-5) 271-279 (2003)
106. H. W. Weijers, Y. S. Hascicek, K. Marken, A. Mbaruku, M. Meinesz, H. Miao, S. H. Thompson, F. Trillaud, U. P. Trociewitz, and J. Schwartz, "Development of a 5 T HTS Insert Magnet as part of 25 T Class Magnets," *IEEE Transactions on Applied Superconductivity* **13**(2) 1396-1399 (2003)
107. J.H. Su, P.V.P.S.S. Sastry, and J. Schwartz, "Surface Morphology of $(Hg,Re)Ba_2CaCu_2O_y$ Thin Films Prepared by Pulsed Laser Deposition," *IEEE Transactions on Applied Superconductivity* **13**(2) 2809-2812 (2003)
108. U.P. Trociewitz, P.V.P.S.S. Sastry, A. Wyda, K. Crockett, and J. Schwartz, "Magnetic Properties of Neutron Irradiated and Doped MgB_2 Superconductors," *IEEE Transactions on Applied Superconductivity* **13**(2) 3320-3323 (2003)
109. H. Maeda, P.V.P.S.S. Sastry, U.P.Trociewitz, and J. Schwartz, "Critical Current Density and Microstructures of Thick Monocore Bi2212 Tapes Grown in High Magnetic Fields," *IEEE Transactions on Applied Superconductivity* **13**(2) 3339-3342 (2003)
110. A.L. Mbaruku, K.R. Marken, M. Meinesz, H. Miao, P.V.P.S.S. Sastry, and J. Schwartz, "Effect of Processing Defects on Stress-Strain-I_c for AgMg Sheathed Bi-2212 tapes," *IEEE Transactions on Applied Superconductivity* **13**(2) 3522-3525 (2003)
111. D.C van der Laan, H.J.N. van Eck, B. ten Haken, H.H.J. ten Kate, and J. Schwartz, "Strain Effects in High Temperature Superconductors Investigated with Magneto-Optical Imaging," *IEEE Transactions on Applied Superconductivity* **13**(2) 3534-3539 (2003)
112. M. Dhallé, D. C. van der Laan, H. J. N. van Eck, L. Vargas, B. ten Haken, H. H. J. ten Kate, U.P. Trociewitz and J. Schwartz, "Comparing Powder Magnetization and Transport Critical Current of Bi,Pb(2223) Tapes," *IEEE Transactions on Applied Superconductivity* **13**(2) 3702-3705 (2003)

113. H.W. Weijers, J. Schwartz, B. ten Haken, M. Dhalle, and H.H.J. ten Kate, "Effects of conductor anisotropy on the design of Bi-Sr-Ca-Cu-O sections of 25 T solenoids," *Superconductor Science & Technology* **16** 672-681 (2003)

114. J.H. Su, P.V.P.S.S. Sastry and J. Schwartz, "Magnetization and transport properties of silver-sheathed (Hg,Re)$Ba_2Ca_2Cu_3O_{8+\delta}$ tapes," *Superconductor Science & Technology* **16** 1134-1138 (2003)

115. P.V.P.S.S.Sastry, D.N.Nguyen, P.Usak and J.Schwartz, "Verification of thermal interpretation of BSCCO-2223/Ag V-I hysteresis," *Superconductor Science & Technology* **17** 314-319 (2004)

116. H.W. Weijers, U.P Trociewitz, K. Marken, M. Meinesz, H. Miao and J. Schwartz, "The generation of 25.05 T using a 5.11 T $Bi_2Sr_2CaCu_2O_x$ superconducting insert magnet," *Superconductor Science & Technology* **17** 636-644 (2004)

117. I.B. Rutel, C. McIntosh, A. Caruso, M.W. Davidson and J. Schwartz, "Quantitative analysis of current density distributions from magneto-optical images of superconducting $YBa_2Cu_3O_{7-\delta}$ coated conductors," *Superconductor Science & Technology* **17** S269-S273 (2004)

118. G.M. Zhang, J. Schwartz, P.V.P.S.S. Sastry, L.Z. Lin, L.Y Xiao, and Y.J. Yu, "Effects of bending strain on the critical current and AC loss of BSCCO/Ag tape," *Superconductor Science & Technology* **17** 1018-1021 (2004)

119. J.H. Su, P.V.P.S.S. Sastry and J. Schwartz, "Relative effects of Pb and Re doping in Hg-1223 thick films grown on Ag substrates," *Journal of Materials Research* **19**(9) 2658-2664 (2004)

120. G.M. Zhang, J. Schwartz, P.V.P.S.S. Sastry, L.Z. Lin, L.Y Xiao, and Y.J. Yu, "Stress/strain dependence of AC loss and critical current of steel-reinforced $Bi_2Sr_2Ca_2Cu_3O_{10}$ tape," *Applied Physics Letters* **85**(20) 4687-4689 (2004)

121. D.C. van der Laan, L.M. Naveira, H.J.N. van Eck M. Dhalle, B. Metz, J. Schwartz, M.W. Davidson, B. ten Haken and H.H.J. ten Kate, "Direct experimental analysis of the relation between the grain structure and distribution in critical current density in $YBa_2Cu_3O_{7-\delta}$ coated conductors," *Superconductor Science & Technology* **18** 299-306 (2005)

122. D.C. van der Laan, H.J.N. van Eck, M. Dhalle, B. Metz, B. ten Haken, H.H.J. ten Kate, L.M. Naveira, M.W. Davidson and J. Schwartz, "Two- and three-dimensional connectivity and current distribution in $YBa_2Cu_3O_x$-coated conductors," *Applied Physics Letters* **86** 032512-1:3 (2005)

123. B. Xu, J.H. Su and J. Schwartz, "Dependence of transport critical current of magnetic field processed $Bi_2Sr_2CaCu_2O_x$/AgMg tapes on the background magnetic field and magnetic field direction," *Superconductor Science & Technology* **18** 503-507 (2005)

124. H. W. Weijers, B. ten Haken, H.H.J. ten Kate and J. Schwartz, "Field dependence of the critical current and its relation to the anisotropy of BSCCO conductors and coils," *IEEE Transactions on Applied Superconductivity* **15**(2) 2558-2561 (2005)

125. X.R. Wang, A.R. Caruso, M. Breschi, G.M. Zhang, U.P. Trociewitz, H.W. Weijers and J. Schwartz, "Normal zone initiation and propagation in Y-Ba-Cu-O coated conductors with Cu stabilizer," *IEEE Transactions on Applied Superconductivity* **15**(2) 2586-2589 (2005)

126. D.N. Nguyen, P.V.P.S.S. Sastry, G.M. Zhang, D.C. Knoll and J. Schwartz, "AC loss measurement with a phase difference between current and applied magnetic field," *IEEE Transactions on Applied Superconductivity* **15**(2) 2831-2834 (2005)

127. G. M. Zhang, D. N. Nguyen, A. Mbaruku, P. V. P. S. S. Sastry and J. Schwartz, "Critical current and AC loss of $Bi_2Sr_2Ca_2Cu_3O_{10}$/Ag tapes subjected to tensile stress," *IEEE Transactions on Applied Superconductivity* **15**(2) 2835-2838 (2005)

128. G. M. Zhang, P.V.P.S.S. Sastry, J. Schwartz, L.Z. Lin, L.Y. Xiao and Y.J. Yu, "Angular dependence of AC losses in stacks of $Bi_2Sr_2Ca_2Cu_3O_{10}$/Ag tapes," *IEEE Transactions on Applied Superconductivity* **15**(2) 2887-2890 (2005)

129. A.L. Mbaruku, U.P. Trociewitz and J. Schwartz, "Development of a low-temperature electro-mechanical testing device," *IEEE Transactions on Applied Superconductivity* **15**(2) 3620-3623 (2005)

130. D.N. Nguyen, P.V.P.S.S. Sastry, D.C. Knoll, G.M. Zhang and J. Schwartz, "Experimental and numerical studies of the effect of phase difference between transport current and perpendicular applied magnetic field on total ac loss in Ag-sheathed $(Bi,Pb)_2Sr_2Ca_2Cu_3O_x$ tape," *Journal of Applied Physics* **98**, 073902 (6 pp) (2005)

2006 – 2010

131. D.C. van der Laan, J.W. Ekin, H.J.N. van Eck, M. Dhallé, B. ten Haken, M.W. Davidson and J. Schwartz, "Effect of tensile strain on grain connectivity and flux pinning in $Bi_2Sr_2Ca_2Cu_3O_x$ tapes," *Applied Physics Letters* **88**, 022511 (3 pp) (2006)

132. P. Usak, P.V.P.S.S. Sastry and J. Schwartz, "Model inverse calculation of current distributions in the cross-section of a superconducting cable," *Physica C* **434** 1-5 (2006)

133. W.D. Markiewicz, J.R. Miller, J. Schwartz, U.P. Trociewitz and H.W. Weijers, "Perspective on a Superconducting 30 T/ 1.3 GHz NMR Spectrometer Magnet," *IEEE Transactions on Applied Superconductivity* **16**(2) 1523-1526 (2006)

134. D.N. Nguyen, P.V.P.S.S. Sastry, D.C. Knoll and J. Schwartz, "Electromagnetic and calorimetric measurements for AC losses of an $YBa_2Cu_3O_{7-\delta}$ coated conductor with Ni-alloy substrate," *Superconductor Science & Technology* **19** 1010-1017 (2006)

135. M. Breschi, P.L. Ribani, X. Wang and J. Schwartz, "Theoretical explanation of non-equipotential quench behavior in Y-Ba-Cu-O coated conductors," *Superconductor Science & Technology* Rapid Communication **20** L9–L11 (2007)

136. X.R. Wang, U.P. Trociewitz and J. Schwartz, "Near adiabatic quench experiments on short $YBa_2Cu_3O_{7-\delta}$ coated conductors," *Journal of Applied Physics* **101**(5) 053904 (10 pp) (2007)

137. D. Nguyen, P.V.P.S.S. Sastry and J. Schwartz, "Numerical calculation of the total AC loss of Cu-stabilized $YBa_2Cu_3O_{7-x}$ coated conductors with a ferromagnetic substrate," *Journal of Applied Physics* **101**(5) 053905 (9 pp) (2007)

138. A.L. Mbaruku and J. Schwartz, "Statistical analysis of electro-mechanical properties of AgMg sheathed $Bi_2Sr_2CaCu_2O_{8+x}$ superconducting tapes using Weibull distributions," *Journal of Applied Physics* **101**(7) 073913 (5 pp) (2007)

139. G.M. Zhang, D.C. Knoll, D.N. Nguyen, P.V.P.S.S. Sastry and J. Schwartz, "Temperature dependence of critical currents and ac transport losses in $(Bi,Pb)_2Sr_2Ca_2Cu_3O_x$ and $YBa_2Cu_3O_x$ tapes," *Superconductor Science & Technology* **20** 516-521 (2007)

140. Ph. Vanderbemden, S. Denis, M. Ausloos, I.B. Rutel, J. Schwartz, Z. Hong, T.A. Coombs, N.H. Babu, D.A. Cardwell and A.M. Campbell, "Behavior of bulk high-temperature superconductors of finite thickness subjected to crossed magnetic fields," *Physical Review B* **75** 174515 (14 pp) (2007)

141. H. Miao, K.R. Marken, M. Meinesz, B. Czabaj, S. Hong, A. Twin, P. Noonan, U.P. Trociewitz and J. Schwartz, "High Field Insert Coils from Bi-2212/Ag Round Wires," *IEEE Transactions on Applied Superconductivity* **17**(2) 2262—2265 (2007)

142. A.L. Mbaruku, U. P. Trociewitz, X. R. Wang and J. Schwartz, "Relationships Between Conductor Damage, Quenching and Electromechanical Behavior in YBCO Coated Conductors," *IEEE Transactions on Applied Superconductivity* **17**(2) 3044—3049 (2007)

143. M.A. Ramos, X.T. Liu, T.M. Shen, U.P. Trociewitz and J. Schwartz, "Magnetic Field Enhanced Texture of Low Aspect Ratio $Bi_2Sr_2CaCu_2O_{8+x}$/AgMg Wires as Measured by Electrical Transport," *IEEE Transactions on Applied Superconductivity* **17**(2) 3103—3105 (2007)

144. S. Pamidi, D. Nguyen, G.M. Zhang, D.C. Knoll, U.P. Trociewitz, and J. Schwartz, "Variable Temperature Total AC Loss and Stability Characterization Facility," *IEEE Transactions on Applied Superconductivity* **17**(2) 3179—3182 (2007)

145. J. Schwartz and G.A. Merritt, "Proof-of-principle experiments for react-wind-sinter manufacturing of $Bi_2Sr_2CaCu_2O_{8+x}$ magnets," *Superconductor Science & Technology Rapid Communication* **20** L59—L62 (2007)

146. G.M. Zhang, D.C. Knoll, D.N. Nguyen, P.V.P.S.S. Sastry, U.P. Trociewitz, X.R. Wang and J. Schwartz, "Quench behavior of $YBa_2Cu_3O_7$ coated conductors with ac transport currents," *IEEE Transactions on Applied Superconductivity* **17**(4) 3874—3879 (2007)

147. U.P. Trociewitz, B. Czabaj, S. Hong, Y. Huang, D.C. Knoll, D.C. Larbalestier, W.D. Markiewicz, H. Miao, M. Meinesz, X. Wang and J. Schwartz, "Quench studies on a layer-wound $Bi_2Sr_2CaCu_2O_x$ /AgX coil at 4.2 K," *Superconductor Science & Technology* **21** 025015 (5 pp) (2008)

148. T. Effio, U.P. Trociewitz, X. Wang and J. Schwartz, "Quench induced degradation in $Bi_2Sr_2CaCu_2O_x$ tape conductors at 4.2 K," *Superconductor Science & Technology* **21** 045010 (10 pp) (2008)

149. D.C. van der Laan, J. Schwartz, H.J.N. van Eck, B. ten Haken and M. Dhallé, "Limits to the critical current in $Bi_2Sr_2Ca_2Cu_3O_x$ tape conductors: The parallel path model," *Physical Review B* **77** 104514 (14 pp) (2008)

150. J. Schwartz, T. Effio, X. Liu, Q.V. Le, A.L. Mbaruku, H.J. Schneider-Muntau, T. Shen, H. Song, U.P. Trociewitz, X.R. Wang and H.W. Weijers, "High field superconducting solenoids via high temperature superconductors," *IEEE Transactions on Applied Superconductivity* **18**(2) 70—81 (2008)

151. T.M. Shen, X.T. Liu, U.P. Trociewitz, W.T. Nachtrab, T. Wong and J. Schwartz, "Electromechanical behavior of $Bi_2Sr_2CaCu_2O_x$ conductor using a split melt process for react-wind-sinter magnet fabrication," *IEEE Transactions on Applied Superconductivity* **18**(2) 520—524 (2008)

152. X.T. Liu, T.M. Shen, U.P. Trociewitz and J. Schwartz, "React-wind-sinter processing of high superconductor fraction $Bi_2Sr_2CaCu_2O_x$/AgMg round wire," *IEEE Transactions on Applied Superconductivity* **18**(2) 1179—1183 (2008)

153. W.T. Nachtrab, C.V. Renaud, T. Wong, X.T. Liu, T.M. Shen, U.P. Trociewitz and J. Schwartz, "Development of high superconductor fraction $Bi_2Sr_2CaCu_2O_x$/Ag wire for MRI," *IEEE Transactions on Applied Superconductivity* **18**(2) 1184—1187 (2008)

154. A.L. Mbaruku and J. Schwartz, "Fatigue Behavior of Y-Ba-Cu-O/Hastelloy-C Coated Conductor at 77 K," *IEEE Transactions on Applied Superconductivity* **18**(3) 1743—1752 (2008)

155. X. Wang, S.V.P.S.S. Pamidi, U.P. Trociewitz and J. Schwartz, "Self-field quench behavior of multifilamentary MgB_2 wires in liquid helium," *Cryogenics* **48** 469—477 (2008)

156. J. Kim, Y. Chen, K.-S. Kang, Y.-B. Park, and J. Schwartz, "Magnetic field effect for cellulose nanofiber alignment," *Journal of Applied Physics* **104**, 096104 (3 pp) (2008)

157. A. Oliver, J. Built, Q.V. Le, A.L. Mbaruku and J. Schwartz, "Mechanical properties of non-functionalized multiwall nanotube reinforced polycarbonate at 77 K," *Nanotechnology* **19**, 505702 (8 pp) (2008)

158. H. Song, M.W. Davidson and J. Schwartz, "Dynamic magneto-optical imaging of transport current redistribution and normal zone propagation in $YBa_2Cu_3O_x$ coated conductor," *Superconductor Science & Technology Rapid Communication* **22** 062001 (6 pp) (2009)

159. X.T. Liu and J. Schwartz, "On the influence of magnetic field processing on the texture, phase assemblage and properties of low aspect ratio $Bi_2Sr_2CaCu_2O_x$/AgMg wire," *Science and Technology of Advanced Materials* **10** 014605 (2009)

160. D.S. Li, H. Garmestani and J. Schwartz, "Modeling thermal conductivity in UO_2 with BeO additions as a function of microstructure," *Journal of Nuclear Materials* **392** 22–27 (2009)

161. X.R. Wang, U.P. Trociewitz and J. Schwartz, "Self-field quench behavior of YBCO coated conductors with different stabilizers," *Superconductor Science & Technology* **22** 085005 (13 pp) (2009)

162. C.L.H. Thieme, K.J. Gagnon, J.Y. Coulter, H. Song and J. Schwartz, "Stability of second generation HTS pancake coils at 4.2 K for high heat flux applications," *IEEE Transactions on Applied Superconductivity* **19**(3) 1626—1632 (2009)

163. X.T. Liu, W.T. Nachtrab, T. Wong and J. Schwartz, "Effect of resolidification conditions on $Bi_2Sr_2CaCu_2O_x$/Ag/AgMg coil performance," *IEEE Transactions on Applied Superconductivity* **19**(3) 2232—2236 (2009)

164. W.K. Chan, P.J. Masson, C.A. Luongo and J. Schwartz, "Influence of inter-layer contact resistances on quench propagation in $YBa_2Cu_3O_x$ coated conductors," *IEEE Transactions on Applied Superconductivity* **19**(3) 2490—2495 (2009)

165. W.T. Nachtrab, T. Wong, X.T. Liu and J. Schwartz, "The effect of filament diameter on J_e in high filament count Bi2212/Ag round wire," *IEEE Transactions on Applied Superconductivity* **19**(3) 3061—3066 (2009)

166. C.G. Carson, K. Hardcastle, J. Schwartz, X.T. Liu, C. Hoffmann, R.A. Gerhardt and R. Tannenbaum, "Synthesis and Structure Characterization of Copper Terephthalate Metal-Organic Frameworks," *European Journal of Inorganic Chemistry* **16** 2338-2343 (2009)

167. D.N. Nguyen, P.V.P.S.S. Sastry, D.C. Knoll and J. Schwartz, "Temperature dependence of total AC loss in high temperature superconducting tapes," *IEEE Transactions on Applied Superconductivity* **19**(4) 3637—3644 (2009)

168. H. Song and J. Schwartz, "Stability and quench behavior of $YBa_2Cu_3O_{7-x}$ coated conductor at 4.2 K, self-field," *IEEE Transactions on Applied Superconductivity* **19**(5) 3735—3743 (2009)

169. T.M. Shen, J. Jiang, A. Yamamoto, U.P. Trociewitz, J. Schwartz, E.E. Hellstrom, and D.C. Larbalestier, "Development of high critical current density in multifilamentary round wire $Bi_2Sr_2CaCu_2O_{8+\delta}$ by strong overdoping," *Applied Physics Letters* **95** 152516 (3 pp) (2009)

170. T.M. Shen, J. Jiang, F. Kametani, U.P. Trociewitz, D.C. Larbalestier, J. Schwartz and E.E. Hellstrom, "Filament to filament bridging and its influence on developing high critical current density in multifilamentary $Bi_2Sr_2CaCu_2O_x$ round wire," *Superconductor Science & Technology* **23** 025009 (10 pp) (2010)

171. G.M. Zhang, L.Z. Lin, L.Y. Xiao, Y.J. Yu, P.V.P.S.S. Sastry and J. Schwartz, "Quench behavior of $Bi_2Sr_2Ca_2Cu_3O_x$/Ag tape with AC and DC Transport Currents and a Comparison with $YBa_2Cu_3O_x$ Conductors," *IEEE Transactions on Applied Superconductivity* **20**(3) 2146—2149 (2010)

172. H. Song, K. Gagnon, and J. Schwartz, "Quench behavior of conduction-cooled $YBa_2Cu_3O_{7-\delta}$ coated-conductor pancake coils stabilized with brass and copper," *Superconductor Science & Technology* **23** 065021 (10 pp) (2010)

173. I.T. Kim, G.A. Nunnery, K. Jacob, J. Schwartz, X. Liu and R. Tannenbaum, "Synthesis, Characterization, and Alignment of Magnetic Carbon Nanotubes Tethered with Maghemite Nanoparticles," *Journal of Physical Chemistry C* **114**(15) 6944-6951 (2010)

174. A.L. Mbaruku, Q.V. Le, H. Song and J. Schwartz, "Weibull analysis of the electro-mechanical properties of AgMg sheathed $Bi_2Sr_2CaCu_2O_{8+x}$ round wires and $YBa_2Cu_3O_{7-x}$ coated conductors," *Superconductor Science & Technology* **23** 115014 (8 pp) (2010)

175. Rina Tannenbaum, Il Tae Kim, Grady A. Nunnery, Karl I. Jacob, Justin Schwartz and Xiaotao Liu, "Facile alignment of carbon nanotubes mediated by tethered maghemite nanoparticles," in Semiconductor Nanowires - Growth, Physics, Devices, and Applications, edited by H. Riel, W. Lee, M. Zacharias, M. McAlpine, T. Mayer, H. Fan, M. Knez, S. Wong (Mater. Res. Soc. Symp. Proc. Volume 1258, Warrendale, PA, 2010), 1258-R04-05

176. W.K. Chan, P.J. Masson, C. Luongo and J. Schwartz, "Three-dimensional micrometer-scale modeling of quenching in high aspect ratio $YBa_2Cu_3O_{7-\delta}$ coated conductor tapes. Part I: Model development and validation," *IEEE Transactions on Applied Superconductivity* **20**(6) 2370-2380 (2010)

2011 – 2015

177. X. Wang, U.P. Trociewitz and J. Schwartz, "Critical current degradation of short $YBa_2Cu_3O_{7-s}$ coated conductor due to an unprotected quench," *Superconductor Science & Technology* **24** 035006 (11 pp) (2011)

178. D. Arbelaez, S.O. Prestemon, D.R. Dietderich, A. Godeke, L. Ye, F. Hunte and J. Schwartz, "Numerical investigation of the quench behavior of $Bi_2Sr_2CaCu_2Ox$ wire," *IEEE Transactions on Applied Superconductivity* **21**(3) 2787-2790 (2011)

179. W. T. Nachtrab, X.T. Liu, T. Wong and J. Schwartz, "Effect of solidification conditions on partial melt processed $Bi_2Sr_2CaCu_2O_x$/Ag/AgX round wire," *IEEE Transactions on Applied Superconductivity* **21**(3) 2795-2799 (2011)

180. G.M. Zhang, L.Z. Lin, L.Y. Xiao, Y.J. Yu, J. Schwartz and S.V. Pamidi, "A predictive model on temperature dependence of AC transport losses in $(Bi,Pb)_2Sr_2Ca_2Cu_3O_x$ tapes," *Superconductor Science & Technology* **24** 085008 (4 pp) (2011)

181. S. Gupta, T. Zaidi, A. Melton, E. Malguth, H. Yu, I.T. Ferguson, X.T. Liu and J. Schwartz, "Electrical and magnetic properties of $Ga_{1-x}Gd_xN$ grown by metal organic chemical vapor deposition," *Journal of Applied Physics* **110** 083920 (5 pp) (2011)

182. W.K. Chan and J. Schwartz, "Three-dimensional micrometer-scale modeling of quenching in high aspect ratio $YBa_2Cu_3O_{7-\delta}$ coated conductor tapes. Part II: Influence of geometrical and material properties and implications for conductor engineering and magnet design," *IEEE Transactions on Applied Superconductivity* **21**(6) 3628-3634 (2011)

183. A. Kajbfvala, W.T. Nachtrab, N. Cheggour, F. Hunte, X.T. Liu, X. Lu, T. Wong and J. Schwartz, "Dispersion-strengthened silver alumina for sheathing $Bi_2Sr_2CaCu_2O_{8+x}$ multifilamentary wire," *IEEE Transactions on Applied Superconductivity* **22**(1) 840021 (10 pp) (2012) (journal cover)

184. X.T. Liu, Q.V. Le and J. Schwartz, "Influencing factors on the electrical transport properties of split-melt processed $Bi_2Sr_2CaCu_2O_x$ round wires," *Superconductor Science & Technology* **25** 075008 (15pp) (2012)

185. C. Carson, J. Ward, X. Liu, J. Schwartz, R. Gerhardt, and R. Tannenbaum, "Dopant-controlled crystallization in metal-organic frameworks: The role of Cu(II) in zinc 1,4–benzenedicarboxylate," *Journal of Physical Chemistry C* **116** (29) 15322–15328 (2012)

186. W.K. Chan and J. Schwartz, "A hierarchical, three-dimensional, multiscale electro-magneto-thermal model of quenching in $REBa_2Cu_3O_{7-\delta}$ coated conductor based coils," *IEEE Transactions on Applied Superconductivity* **22**(5) 4706010 (10pp) (2012) (Van Duzer Prize)

187. S. Seifikar, A. Tabei, E. Sachet, T. Rawdanowicz, N. Bassiri-Gharb and J. Schwartz "Growth of (111) oriented $Ni(Fe_2O_4)$ polycrystalline thin films on Pt (111) via sol-gel processing," *Journal of Applied Physics* **112** 063908 (7 pp) (2012)

188. H. Song, F. Hunte and J. Schwartz, "On the role of pre-existing defects and magnetic flux avalanches in the degradation of $YBa_2Cu_3O_{7-x}$ coated conductors by quenching," *Acta Materialia* **60**(20) 6991–7000 (2012)

189. S. Seifikar, B. Calandro, E. Deeb, E. Sachet, J. Yang, J.-P. Maria, N. Bassiri-Gharb and J. Schwartz, "Structural and magnetic properties of biaxially textured $NiFe_2O_4$ thin films grown on c-plane sapphire," *Journal of Applied Physics* **112** 123910 (5 pp) (2012)

190. L. Ye, F. Hunte and J. Schwartz, "Effects of high magnetic field on the low-temperature quench behavior of $Bi_2Sr_2CaCu_2O_x$ coils," *Superconductor Science & Technology* **26** 055006 (8 pp) (2013) (selected as a SuST Highlight of 2013)

191. X.F. Gou and J. Schwartz, "Fractal analysis of the role of the rough interface between $Bi_2Sr_2CaCu_2O_x$ filaments and the Ag matrix in the mechanical behavior of composite round wires," *Superconductor Science & Technology* **26** 055016 (12 pp) (2013)

192. L. Ye, D. Cruciani, T. Effio, F. Hunte and J. Schwartz, "On the causes of degradation in $Bi_2Sr_2CaCu_2O_{8+x}$ round wires and coils by quenching at 4.2 K," *IEEE Transactions on Applied Superconductivity* **23**(5) 6400811 (11pp) (2013)

193. S. Ishmael, H. Luo, M. White, F. Hunte, X.T. Liu, N. Mandazy, J.F. Muth, G. Naderi, L. Ye, A.T. Hunt and J. Schwartz, "Enhanced quench propagation in $Bi_2Sr_2CaCu_2O_x$ and $YBa_2Cu_3O_{7-d}$ coils via nanoscale, doped-titania-based thermally conducting electrical insulator," *IEEE Transactions on Applied Superconductivity* **23**(5) 7201311 (11pp) (2013) (journal cover and Van Duzer Prize)

194. S. Seifikar, B. Calandro, G. Rasic, E. Deeb, J. Yang, N. Bassiri-Gharb and J. Schwartz, "Optimized growth of heteroepitaxial (111) $NiFe_2O_4$ thin films on (0001) sapphire with two in-plane variants via chemical solution deposition," *Journal of the American Ceramics Society* **96**(10) 3050-3053 doi:10.1111/jace.12520 (2013)

195. G. Naderi, X.T. Liu, W. Nachtrab and J. Schwartz, "Understanding processing-structure-properties relationships in $Bi_2Sr_2CaCu_2O_x$/Ag round wires and enhanced transport through saw-tooth processing," *Superconductor Science & Technology* **26** 105010 (15 pp) doi:10.1088/0953-2048/26/10/105010 (2013) (journal cover)

196. W.K. Chan, G. Flanagan and J. Schwartz, "Spatial and temporal resolution requirements for quench detection in (RE)$Ba_2Cu_3O_x$ magnets using Rayleigh-scattering based fiber optics distributed sensing," *Superconductor Science & Technology* **26** 105015 (12pp) doi:10.1088/0953-2048/26/10/105015 (2013) (selected as a SuST Highlight of 2013)

197. Y.F. Lee, F. Wu, R. Kumar, F. Hunte, J. Schwartz and J. Narayan, "Epitaxial integration of dilute magnetic semiconductor Sr_3SnO with Si (001)," *Applied Physics Letters* **103** 112101 (4pp) doi: 10.1063/1.4820770 (2013)

198. A. Kajbafvala, W. Nachtrab, R. Kumar, F. Hunte, T. Wong and J. Schwartz, "High strength oxide dispersion strengthened silver aluminum alloys optimized for $Bi_2Sr_2CaCu_2O_{8+x}$ round wire," *Superconductor Science & Technology* **26** 125012 (9pp) doi:10.1088/0953-2048/26/12/125012 (2013)

199. G. Rasic and J. Schwartz, "Nanoimprint lithographic surface patterning of sol-gel fabricated nickel ferrite ($NiFe_2O_4$)" *MRS Communications* **3** 207-211 (5pp) doi:10.1557/mrc.2013.44 (2013)

200. Y.F. Lee, F. Wu, J. Narayan and J. Schwartz, "Oxygen vacancy enhanced room temperature ferromagnetism in Sr_3SnO/c-YSZ/Si (001) heterostructures," *MRS Communications* doi:10.1557/mrc.2014.4 (7pp) (2014)

201. E.B. Callaway, G. Naderi, Q. Le and J. Schwartz, "Statistical study of the relationship between electrical transport and filament microstructure in multifilamentary $Bi_2Sr_2CaCu_2O_x$/Ag/Ag-Mg round wires," *Superconductor Science & Technology* **27** 044020 (8pp) doi:10.1088/0953-2048/27/4/044020 (2014)

202. Q.V. Le, W.K. Chan and J. Schwartz, "A two-dimensional *ordinary*, state-based peridynamics model for linearly elastic solids," *International Journal for Numerical Methods in Engineering* (15pp) doi:10.1002/nme.4642 (2014)

203. G. Rasic and J. Schwartz, "Coercivity reduction in surface patterned nickel ferrite ($NiFe_2O_4$) thin films through surface patterning," *IEEE Magnetics Letters* **5** (4pp) doi:10.1109/LMAG.2014.2302246 (2014)

204. Y. Zhang, C.C. Koch and J. Schwartz, "Synthesis of $Bi_2Sr_2CaCu_2O_x$ superconductors via direct oxidation of metallic precursors," *Superconductor Science & Technology* **27** 055016 (12 pp) doi:10.1088/0953-2048/27/5/055016 (2014)

205. S. Seifikar, T. Rawdanowicz, W. Straka, C. Quintero, N. Bassiri-Gharb and J. Schwartz, "Structural and magnetic properties of sol-gel derived $NiFe_2O_4$ thin films on silicon substrates," *Journal of Magnetism and Magnetic Materials* **361** 255-261 doi:10.1016/j.jmmm.2014.03.004 (2014)

206. R. Varghese, R. Viswan, K. Joshi, S. Seifikar, Y. Zhou, J. Schwartz and S. Priya, "Magnetostriction measurement in thin films using laser doppler vibrometry, *Journal of Magnetism and Magnetic Materials* **363** 179-187 doi:10.1016/j.jmmm.2014.03.076 (2014)

207. G. Naderi and J. Schwartz, "On the role of $Bi_2Sr_2CuO_x$ intergrowths in $Bi_2Sr_2CaCu_2O_x$/Ag round wires: c-axis transport and magnetic flux pinning," *Applied Physics Letters* **104** 152602 (5pp) doi: 10.1063/1.4871805 (2014)

208. A. Kajbafvala, W. Nachtrab, T. Wong and J. Schwartz, "$Bi_2Sr_2CaCu_2O_{8+x}$ round wires with Ag/Al oxide dispersion strengthened sheaths: microstructure–properties relationships, enhanced mechanical behavior and reduced Cu depletion," *Superconductor Science & Technology* **27** 095001 (15 pp) doi:10.1088/0953-2048/27/9/095001 (2014)

209. S.A. Ishmael, M. Slomski, H. Luo, M. White, A. Hunt, N. Mandzy, J.F. Muth, R. Nesbit, T. Paskova, W. Straka and J. Schwartz, "Thermal conductivity and dielectric properties of TiO_2-based electrical insulator for use with high temperature superconducting magnets," *Superconductor Science & Technology* **27** 095018 (9 pp) doi:10.1088/0953-2048/27/9/095018 (2014)

210. Y.F. Lee, S. Punugupati, F. Wu, Z. Jin, J. Narayan and J. Schwartz, "Strong evidence for topological surface states in epitaxial Bi_2Se_3 thin film grown by pulsed laser deposition through magneto-transport measurements," *Current Opinion in Solid State & Materials Science* (7 pp) doi:10.1016/j.cossms.2014.07.001 (2014)

211. G. Naderi and J. Schwartz, "Multiscale studies of processing-microstructure-transport relationships in over-pressure processed $Bi_2Sr_2CaCu_2O_x$/Ag multifilamentary round wire," *Superconductor Science & Technology* **27** 115002 (9 pp) doi:10.1088/0953-2048/27/11/115002 (2014) (selected as a SuST Highlight of 2014)

212. Q.V. Le, W.K. Chan and J. Schwartz, "Two-dimensional peridynamic simulation of the effect of defects on the mechanical behavior of $Bi_2Sr_2CaCu_2O_x$ round wires," *Superconductor Science & Technology* **27** 115007 (17 pp) doi:10.1088/0953-2048/27/11/115007 (2014)

213. G. Rasic and J. Schwartz, "On the origin of coercivity reduction in surface patterned magnetic thin films," *Physica Status Solidi A: Applications and Materials Science* **212**(2) (10 pp) doi:10.1001/pssa.201431434 (2014)

214. Y.F. Lee, J. Narayan and J. Schwartz, "Tunable electronic structure in dilute magnetic semiconductor Sr_3SnO/c-YSZ/Si (001) epitaxial heterostructures," *Journal of Applied Physics* **116** 164903 (7 pp) http://dx.doi.org/10.1063/1.4899438 (2014)

215. L. Ye, D. Cruciani, M. Xu, S. Mine, K. Amm and J. Schwartz, "Magnetic field dependent stability and quench behavior of conduction-cooled MgB_2 wires and coils," *Superconductor Science & Technology* **28** 035015 (16 pp) doi:10.1088/0953-2048/28/3/035015 (2015) (selected as a SuST Highlight of 2015)

216. Y.F. Lee, R. Kumar, F. Hunte, J. Narayan and J. Schwartz, "Control of intrinsic defects and magnetotransport properties in Bi_2Se_3/c-sapphire epitaxial heterostructures," *Acta Materialia* **95** 57-64 doi:10.1016/j.actamat.2015.05.009 (2015)

217. M. Phillips, W.K. Chan and J. Schwartz, "Enhanced quench protection in $REBa_2Cu_3O_{7-\delta}$-based coils by enhancing three-dimensional quench propagation via thermally-conducting electrical insulation," *IEEE Transactions on Applied Superconductivity* **25**(5) 4701411 (11pp) (2015) DOI: 10.1109/TASC.2015.2452224

218. Z. Sun, X. Gou and J. Schwartz, "A three-dimensional fractal-based study of the effects of the complex interface between $Bi_2Sr_2CaCu_2O_x$ filaments and the Ag matrix on the mechanical behavior of composite round wires," *IEEE Transactions on Applied Superconductivity* **25**(5) 6400808 (8pp) (2015) DOI: 10.1109/TASC.2015.2457780

219. Y.F. Lee, R. Kumar, F. Hunte, J. Narayan and J. Schwartz, "Microstructure and transport properties of epitaxial topological insulator Bi_2Se_3 thin films grown on MgO (100), Cr_2O_3 (0001) and Al_2O_3 (0001) templates," *Journal of Applied Physics* **118** 125309 (10 pp) http://dx.doi.org/10.1063/1.4932027 (2015)

220. S.A. Ishmael, S. Rogers, F. Hunte, G. Naderi, C. Roach, W. Straka, and J. Schwartz, "Current density and quench behavior of MgB_2/Ga composite wires," *IEEE Transactions on Applied Superconductivity* **25**(6) 6200908 (8pp) (2015) DOI: 10.1109/TASC.2015.2483597 (journal cover)

2016 – 2020

221. F. Scurti, S. Ishmael, G. Flanagan and J. Schwartz, "Quench detection for high temperature superconductor magnets: a novel technique based on Rayleigh-backscattering interrogated optical fibers (RIOF)," *Superconductor Science & Technology Letters* **29** 03LT01 (8 pp) doi:10.1088/0953-2048/29/3/03LT01 (2016) (selected as a SuST Highlight of 2016)

222. L. Ye, P. Li, T. Shen and J. Schwartz, "Quench degradation limit of multifilamentary Ag/$Bi_2Sr_2CaCu_2O_x$ round wires," *Superconductor Science & Technology* **29** 035010 (10 pp) doi 10.1088/0953-2048/29/3/035010 (2016)

223. Y. Wang, W.K. Chan and J. Schwartz, "Self-protection mechanisms of no-insulation (RE)$Ba_2Cu_3O_x$ high temperature superconductor pancake coils," *Superconductor Science & Technology* **29** 045007 (11 pp) doi 10.1088/0953-2048/29/4/0045007 (2016) (selected as a SuST Highlight of 2016)

224. R. Jha, G. Dulikravich, N. Chakraborti, M. Fan, J, Schwartz, C. Koch, M.J. Colaco, C. Poloni, and I. Egorov, "Algorithms for design optimization of chemistry of hard magnetic alloys using experimental data," *Journal of Alloys and Compounds* **682** 454-467 doi 10.1016/j.jallcom.2016.04.218 (2016)

225. M. Fan, Y. Liu, R. Jha, G.S. Dulikravich, J. Schwartz and C.C. Koch, "On the formation and evolution of Cu-Ni-rich bridges of Alnico alloys with thermomagnetic treatment," *IEEE Transactions on Magnetics* doi 10.1109/tmag.2016.2555956 (2016)

226. S. Rogers, W.K. Chan and J. Schwartz, "Effects of tensile fatigue on critical current and n-value of IBAD-MOCVD $REBa_2Cu_3O_{7-x}$/Hastelloy coated conductor," *Superconductor Science & Technology* **29** 85013 (7 pp) doi 10.1088/0953-2048/29/8/085013 (2016)

227. Y. Zhang, S. Johnson, G. Naderi, M. Chaubal, J. Stieha, G. Venugopal, A. Hunt and J. Schwartz, "High critical current density $Bi_2Sr_2CaCu_2O_x$/Ag wire containing oxide precursor synthesized from nano-oxides," *Superconductor Science & Technology* **29** 095012 (14 pp) 10.1088/0953-2048/29/9/095012 (2016)

228. M. Fan, Y. Liu, R. Jha, G.S. Dulikravich, J. Schwartz and C.C. Koch, "On the evolution of Cu-Ni-rich bridges of Alnico alloys with tempering," *Journal of Magnetism and Magnetic Materials* **420** 296-302 doi 10.1016/j.jmmm.2016.07.040 (2016)

229. G. Rasic, B. Vlahovic, and J. Schwartz, "Underlying causes of the magnetic behavior in surface patterned $NiFe_2O_4$ thin films," *MRS Communications* (5 pp) doi 10.1557/mrc.2016.38 (2016)

230. Y. Zhang, C.C. Koch and J. Schwartz, "Formation of $Bi_2Sr_2CaCu_2O_x$/Ag multifilamentary metallic-precursor powder-in-tube wires," *Superconductor Science & Technology* **29** 125005 (16 pp) doi 10.1088/0953-2048/29/12/125005 (2016)

231. L. Ye, P. Li, J. Jaroszynski, J. Schwartz and T. Shen, "Strain control of composite superconductors to prevent degradation of superconducting magnets due to a quench. I. Ag/$Bi_2Sr_2CaCu_2O_x$ multifilament round wires," *Superconductor Science & Technology* **30** 025005 (6 pp) doi 10.1088/0953-2048/30/2/025005 (2016)

232. P. Li, G. Naderi, J. Schwartz and T. Shen, "On the role of precursor powder composition in controlling microstructure, flux pinning, and the critical current density of Ag/$Bi_2Sr_2CaCu_2O_x$ conductors," *Superconductor Science & Technology* **30** 035004 (10 pp) doi 10.1088/1361-6668/30/3/035004 (2017)

233. R. Jha, G.S. Dulikravich, N. Chakraborti, M. Fan, J. Schwartz, C.C. Koch, M.J. Colaco, C. Poloni and I.N. Egorov, "Self-organizing maps for pattern recognition in design of alloys," *Materials and Manufacturing Processes* doi 10.1080/10426914.2017.1279319 (2017)

234. S. Rogers and J. Schwartz, "Tensile Fatigue Behavior and Crack Growth in $GdBa_2Cu_3O_{7-x}$/Stainless-Steel Coated Conductor Grown via Reactive Co-evaporation," *Superconductor Science & Technology* **30** 045013 (6 pp) doi 10.1088/1361-6668/aa604e (2017)

235. K.J. Song, J.C. Lim, R.K. Ko, C. Park and J. Schwartz, "A non-contact T_c evaluation technique using a Hall probe array," *IEEE Transactions on Applied Superconductivity* **27**(4) 4602804 (4 pp) doi 10.1109/TASC.2017.2663763 (2017)

236. F. Scurti, J. McGarrahan and J. Schwartz, "Effects of metallic coatings on the thermal sensitivity of optical fiber sensors at cryogenic temperatures," *Optical Materials Express* 7(6) 1754 (13 pp) (2017)

237. W.K. Chan and J. Schwartz, "Improved stability, magnetic field preservation and recovery speed in (RE)$Ba_2Cu_3O_x$-based no-insulation magnets via a graded-resistance approach," *Superconductor Science & Technology* **30** 074007 (15 pp) doi 10.1088/1361-6668/aa6eef (2017)

238. F. Scurti, S. Sathyamurthy, M. Rupich and J. Schwartz, "Self-monitoring SMART REBCO coated conductor via integrated optical fibers," *Superconductor Science & Technology* **30** 114002 (13 pp) doi 10.1088/1361-6668/aa8762 (2017)

239. W. Straka, S. Amoah, and J. Schwartz, "Densification of thoria through flash sintering," *MRS Communications* **7(3)** 677–682 doi 10.1557/mrc.2017.70 (2017)

240. Y. Alvandi-Tabrizi and J. Schwartz, "Micromagnetic analysis of crystallographic texturing and substrate-induced strain effects in $NiFe_2O_4$ and $CoFe_2O_4$ thin films," *Acta Materialia* **149** 193–205 doi 10.1016/j.actamat.2018.02.039 (2018)

241. J. Zhou, W.K. Chan and J. Schwartz, "Quench Detection Criteria for $YBa_2Cu_3O_{7-\delta}$ Coils Monitored via a Distributed Temperature Sensor for 77 K Cases," *IEEE Transactions on Applied Superconductivity* **28(5)** 4703012 (12 pp) doi 10.1109/TASC.2018.2815920 (2018)

242. P. Gao, W.K. Chan, X. Wang, and J. Schwartz, "Mixed-Dimensional modeling of delamination in Rare Earth-Barium-Copper-Oxide coated conductors composed of laminated high aspect ratio thin films," *Superconductor Science & Technology* **31** 074004 (16 pp) doi 10.1088/1361-6668/aac55c (2018)

243. J. Zhou, W.K. Chan, and J. Schwartz, "Modeling of quench behavior of $YBa_2Cu_3O_{7-\delta}$ pancake magnets and distributed temperature sensing-based quench detection for operating temperature from 30 K to 77 K," *IEEE Transactions on Applied Superconductivity* **29(1)** 47003111 (11 pp) doi 10.1109/TASC.2018.2874423 (2019)

244. X.F. Gou, P.J. Zhuo, X.X. Zhou, and J. Schwartz, "Fractal-based analysis of the void microstructure of $Bi_2Sr_2CaCu_2O_x$ superconducting filaments and the caused anomalous thermal diffusion," *Computational Materials Science* **158** 219-227 doi 10.1016/j.commatsci.2018.11.009 (2019)

245. J. Ma, J. Geng, W.K. Chan, J. Schwartz, and T. Coombs, "A temperature-dependent multilayer model for direct current carrying HTS coated-conductors under perpendicular AC magnetic fields," *Superconductor Science & Technology* **33** 045007 (16pp) doi 10.1088/1361-6668/ab6fe9 (2020)

246. P. Gao, W.K. Chan, X. Wang, Y. Zhou, and J. Schwartz, "Stress, strain and electromechanical analyses of (RE)$Ba_2Cu_3O_x$ conductors using three-dimensional/two-dimensional mixed-dimensional modeling: fabrication, cooling and tensile behavior," *Superconductor Science & Technology* **33** 044015 (17pp) doi 10.1088/1361-6668/ab7778 (2020)

247. D. van der Laan, J. Weiss, F. Scurti, and J. Schwartz, "CORC® wires with integrated optical fibers for temperature and strain monitoring and voltage wires for reliable quench detection," *Superconductor Science & Technology* **33** 085010 (22 pp) doi 10.1088/1361-6668/ab9ad1 (2020)

248. A.B. Meddeb, I. Chae, F. Scurti, J. Schwartz, S. Kim, and Z. Ounaies, "From a cholesteric non-aqueous cellulose nanocrystal suspension to a highly ordered film," *Materials Advances* 10.1557/adv.2020.404 (8pp) (2020)

2021 – present

249. J. Zhou and J. Schwartz, "An exponential law of hot spot temperature versus normal zone propagation velocity during the quench of an $YBa_2Cu_3O_{7-\delta}$ pancake magnet," *IEEE Transactions on Applied Superconductivity* **31(2)** 4600307 (7 pp) doi 10.1109/TASC.2020.3040183 (2021)

250. F. Scurti, J. Weiss, D. van der Laan, and J. Schwartz, "SMART conductor on round core (CORC®) wire via integrated optical fibers," *Superconductor Science & Technology* 4 035026 (15 pp) doi 10.1088/1361-6668/abdc7f (2021)

251. J. Zhou and J. Schwartz, "Effect of heaters on the measurement of normal zone propagation velocity on short YBCO conductors," *Physica C* **583** (7 pp) doi.org/10.1016/j.physc.2021.1353848 (2021)

252. F. Scurti, C. Velez, A. Kelly, S. Ishmael, and J. Schwartz, "In-field strain and temperature measurements in a (RE)$Ba_2Cu_3O_{7-x}$ coil via Rayleigh-backscattering interrogated optical fibers," *Smart Materials and Structures* **32** 065006 (12 pp) **doi.org**/10.1088/1361-665X/acc7df (2023)

In review

253. N. Oliver, F. Ndao, J. Schwartz, D. Rountree, and F. Scurti, "Cryogenic characterization of Type-II fiber Bragg grating sensors for high-radiation environments, *Journal of Lightwave Technology* (submitted 2024)

Published Conference Proceedings (some peer-reviewed)

1. J. Schwartz, L. Bromberg, D.R. Cohn and J.E.C. Williams, "High Field, Low Current Operation of Engineering Test Reactors," *Proceedings of 12th Symposium on Fusion Engineering* (1987)
2. D.R. Cohn, J. Schwartz, R.L. Bieri, L. Bromberg, and J.E.C. Williams, "DT and DHe^3 Tokamak Test Reactor Concepts Using Advanced, High Field Superconductors," *Proceedings of 12th Symposium on Fusion Engineering* (1987)
3. L. Bromberg, D.R. Cohn, R.L. Creedon, S.P. Grotz, J. Schultz, J. Schwartz and J.E.C. Williams, "High Field Magnet Designs for the ARIES-I Reactor," *Proceedings of 13th Symposium on Fusion Engineering* (1989)
4. F. Najmabadi, ..., J. Schwartz, *et al.,* "The Aries-I Tokamak Reactor Study," *Proceedings of 16th Symposium on Fusion Engineering,* 253-257 (1990)

5. L. Bromberg, D.R. Cohn, J. Schultz, J. Schwartz, P. Titus, J.E.C. Williams, S.P. Grotz, R.L. Creedon and C.P.C. Wong, "Magnet Design for the ARIES-I High Field Tokamak Reactor," *Proceedings of 16th Symposium on Fusion Engineering,* 1545-1549 (1990)
6. J.L. Hill, B.C. Amm and J. Schwartz, "A Comparison of Force-Reduced Toroidal Geometries and Conventional Superconducting Magnets," *Advances in Cryogenic Engineering* **39***,* Cryogenic Engineering Conference, 285-291 (1994)
7. J. Guo, J. Schwartz, Y.S. Cha, C.-T. Wu and K.C. Goretta, "Effects of Hot-Rolling on Powder-In-Tube BSCCO Tapes," *Advances in Cryogenic Engineering* **40***,* International Cryogenic Materials Conference, 169-176 (1994)
8. K.C. Goretta, Y.F. Li, R.B. Poeppel, S. Wu, J. Guo, and J. Schwartz, "Effects of Lithium Additions on Processing of Bi-Sr-Ca-Cu-O Superconducting Tapes," *Nucleotecnica* **AÑO 14**, Proceedings of the II Chilean Lithium Symposium, 15-22 (1994)
9. S.W. Van Sciver, Y. Eyssa, Y. Hascicek, W.D. Markiewicz, H.J. Schneider-Muntau, and J. Schwartz, "Development of High T_c Insert Coils for NMR Applications," Proceedings of the 1995 International Workshop on Superconductivity, 278-281 (1995)
10. J. Schwartz, V. Fischer, M. Godfrey, Y. Hascicek, D. Hilton, J. Kessler, V. Miller, P.V. Shoaff, S.W. Van Sciver, W. Wei, and H. Weijers, "High Temperature Superconductivity Research and Development at the National High Magnetic Field Laboratory," Proceedings of the 7th U.S. -Japan Workshop on High-T_c Superconductors, 62-66 (1996)
11. P.V. Shoaff, Jr., J. Schwartz, S.W. Van Sciver, and H.W. Weijers, "HTS Coil and Joint Development for a 5T NMR Insert Coil," *Advances in Cryogenic Engineering* **41**, Cryogenic Engineering Conference, 413-416 (1996)
12. E.E. Burkhardt and J. Schwartz, "Two-Dimensional Finite Element Analysis of the Stability of Ag/BSCCO Tapes," *Advances in Cryogenic Engineering* **41**, Cryogenic Engineering Conference, 545-552 (1996)
13. J. Kessler, W. Wei, H. Weijers, and J. Schwartz, "Properties of Bi(2212) Short and Long Wires and Tapes," *Advances in Cryogenic Engineering* **42**, International Cryogenic Materials Conference, 595-601 (1996)
14. Ch. Wolters, K.M. Amm, Y.R. Sun, and J. Schwartz, "Preparation of HgBaCaCuO Polycrystals and Silver Sheathed Tapes by a Two-Zone Technique," *Advances in Cryogenic Engineering* **42***,* International Cryogenic Materials Conference, 679-685 (1996)
15. J. Schwartz, "High Temperature Superconductors for High Field Magnets," Proceedings of the High Magnetic Fields: Industry, Materials and Technology International Workshop, 435-447 (1997)
16. W. Wong-Ng, E.J. Gonzalez, G.J. Piermarini, Ch. Wolters, J. Schwartz, and M.R. Gallas, "X-ray Diffraction Study of High T_c and Related Phases at High Pressures," *Advances in X-ray Analysis* **40**, Proceedings of the 45th Annual Conference on Applications of X-ray Analysis, 12 pages (CD ROM only) (1998)
17. E.E. Burkhardt and J. Schwartz, "Three-Dimensional Analytical Analyses of the Stability of Ag/BSCCO Tapes," *Advances in Cryogenic Engineering* **43A***,* Cryogenic Engineering Conference, 357-363 (1998)
18. K.M. Amm, P.V.P.S.S. Sastry, D.C. Knoll, and J. Schwartz, "The Influence of Metallic Interfaces on the Properties of Bulk $(Hg,A)Ba_2Ca_2Cu_3O_y$ (A=Pb,Bi) Superconductors," *Advances in Cryogenic Engineering* **44B***,* International Cryogenic Materials Conference, 457-464 (1998)
19. P.V.P.S.S. Sastry, K.M. Amm, D.C. Knoll, S.C. Peterson, and J. Schwartz, "Synthesis and Processing of Doped $Hg_1Ba_2Ca_2Cu_3O_y$ Superconductors," *Advances in Cryogenic Engineering* **44B***,* International Cryogenic Materials Conference, 477-484 (1998)

20. C.L.H. Thieme, D. Daly, L.J. Masur, and J. Schwartz, "High Strain Warm Extrusion and Warm Rolling of Multifilamentary Bi-2223 Metallic Precursor Wire," *Advances in Cryogenic Engineering* **44B**, International Cryogenic Materials Conference, 533-540 (1998)
21. U.P. Trociewitz, P.V.P.S.S. Sastry, B.T. Boutemy, P.R. Sahm, and J. Schwartz, "Investigations on BaO_2 Additions in Ag-Clad $Bi_2Sr_2CaCu_2O_x$ Conductors," *Advances in Cryogenic Engineering* **44B**, International Cryogenic Materials Conference, 663-670 (1998)
22. B.C. Amm, Y.S. Hascicek, J. Schwartz, and L.Y. Xiao, "Mechanical Properties and Strain Effects in $Bi_2Sr_2CaCu_2O_x$/Ag Composite Conductors," *Advances in Cryogenic Engineering* **44B**, International Cryogenic Materials Conference, 671-678 (1998)
23. P.V.P.S.S. Sastry, D.C. Knoll, and J. Schwartz, "Synthesis and Processing of Doped $Hg_1Ba_2Ca_2Cu_3O_y$ Superconductors," Proceedings of the 8th U.S.-Japan Workshop on High Temperature Superconductors, 108-117 (1998)
24. Y.S. Hascicek, O. Dur, I.H. Mutlu, J. Schwartz, and S.W. Van Sciver, "HTS High Field Insert Coil Development Related Activities at the NHMFL," Proceedings of the 8th U.S.-Japan Workshop on High Temperature Superconductors, 232-240 (1998)
25. H.W. Weijers, K. Marken, D. Hazelton, Y.S. Hascicek, and J. Schwartz, "Recent Developments on Bi-2212 Insert Coils," Proceedings of the 8th U.S.-Japan Workshop on High Temperature Superconductors, 247-254 (1998)
26. J. Schwartz, U.P. Trociewitz, W. Wei, P.V.P.S.S. Sastry, B.T. Boutemy, and P.R. Sahm, "Improved Flux Pinning in $Bi_{2.1}Sr_{1.7}CaCu_2O_x$ Powders and Powder-in-Tube Tapes via BaO_2 and MgO Additions," Proceedings of the Fifteenth International Conference on Magnet Technology Part Two, Science Press, Beijing, 960-965 (1998)
27. Y. Viouchkov, H. W. Weijers, M. Meinesz, Q. Hu, Y. Hascicek, and J. Schwartz, "Stress-Strain-I_c Characterization of Bi-2212 Tapes," Proceedings of the 11th International Symposium on Superconductivity (ISS '98), 1485-1488 (1999)
28. H.W. Weijers, Q.Y.Hu, Y. Viouchkov, E. Celik, Y.S. Hascicek, K. Marken, J. Parrell, and J. Schwartz, "Development and Testing of a 3 T Bi-2212 Insert Magnet," *Advances in Cryogenic Engineering* **45A**, Cryogenic Engineering Conference, 769-778 (2000)
29. U.P. Trociewitz, P.R. Sahm, and J. Schwartz, "Effects of Ba Additions on Bulk Bi-2212 and Ag-Clad Bi-2212 Tape," *Advances in Cryogenic Engineering* **46B**, International Cryogenic Materials Conference, 567-574 (2000)
30. Y. Viouchkov, H.W. Weijers, Q.Y. Hu, Y. Hascicek, and J. Schwartz, "Mechanical Properties of Ag- and AgMg- Sheathed $Bi_2Sr_2CaCu_2O_x$ Tapes for High Field Insert Magnets," *Advances in Cryogenic Engineering* **46B**, International Cryogenic Materials Conference, 647-653 (2000)
31. P.V.P.S.S. Sastry, Y. Li, J. Su, K.W. Hamill, M. Chatard, and J. Schwartz, "Effect of Silver Interface on the Formation and Stability of HgPb1223 Superconductors," *Advances in Cryogenic Engineering* **46B**, International Cryogenic Materials Conference, 715-722 (2000)
32. Q.Y. Hu and J. Schwartz, "Heat Treatment of AgMg- and Ag-Sheathed $Bi_2Sr_2CaCu_2O_x$ Tapes for a 3 T Insert Magnet," *Advances in Cryogenic Engineering* **46B**, International Cryogenic Materials Conference, 863-870 (2000)
33. J. Schwartz, J.H. Su, D.C. van der Laan, P.V.P.S.S. Sastry, and Y.S. Hascicek, "Fabrication and Characterization of $(Hg,Re)Ba_2Ca_2Cu_3O_{8+\delta}$ within Silver-Sheathed Tapes," Proceedings of the ISTEC-MRS Workshop on High Temperature Superconductors, (2001)
34. J.H. Su, P. V. P. S. S. Sastry, D.C. van der Laan, and J. Schwartz, "Fabrication and Properties of $(Hg,Pb)Ba_2Ca_2Cu_3O_{8+x}$ Silver-Sheathed Tapes," *Advances in Cryogenic Engineering* **48B**, International Cryogenic Materials Conference, 639-646 (2002)

35. U.P. Trociewitz, H.J.N van Eck, S.H. Thompson, A. Mbaruku, H. Weijers, and J. Schwartz, "Development of a LNe Test Facility," Advances in Cryogenic Engineering 47A, Cryogenic Engineering Conference, 139-146 (2002)
36. I.B. Rutel, C. McIntosh, A. Caruso, D.C. van der Laan, M. Davidson, and J. Schwartz, "Magneto optical imaging of cracking in high temperature superconducting thin films and tapes under tensile strain," in Magneto Optical Imaging, NATO Science Series, II. Mathematics, Physics and Chemistry – Vol. 142, 133-140, T.H. Johansen and D.V. Shantsev, eds. (2004)
37. O.E. Castillo, P.V.P.S.S. Sastry, B. Trociewitz, U. P. Trociewitz, and J. Schwartz, "Microstructural and superconducting properties of V-doped MgB_2 bulk and wires," *Advances in Cryogenic Engineering Materials* **50B**, International Cryogenic Materials Conference, 546-553 (2004)
38. H. Maeda, U.P. Trociewitz, P.V.P.S.S. Sastry, J. Schwartz, M. Toshima, and M. Sato, "Phase formation and critical current density of Ag-sheathed Bi2223 tapes with insulating Sr-V-O barriers," *Advances in Cryogenic Engineering Materials* **50B**, International Cryogenic Materials Conference, 612-619 (2004)
39. A.L. Mbaruku, I. Rutel, U.P. Trociewitz, H.W. Weijers, and J. Schwartz, "Electro-Mechanical Behavior of YBCO Coated Conductor in Tension," *Advances in Cryogenic Engineering Materials* **50B**, International Cryogenic Materials Conference, 700-705 (2004)
40. F. Trillaud, A. Caruso, J. Barrow, B. Trociewitz, U.P. Trociewitz, H.W. Weijers, and J. Schwartz, "Normal Zone Generation and Propagation in $YBa_2Cu_3O_{7-\delta}$ Coated Conductors Initialized by Localized, Pulsed Disturbances," *Advances in Cryogenic Engineering Materials* **50B**, International Cryogenic Materials Conference, 852-859 (2004)
41. P.V.P.S.S. Sastry, U.P. Trociewitz, H. Maeda and J. Schwartz, "Enhancement of Texture and Critical Current Density in $Bi_2Sr_2Ca_1Cu_2O_8$ Superconducting Tapes Through Magnetic Field Processing," *Materials Processing in Magnetic Fields*, Proceedings of the International Workshop on Materials Analysis and Processing in Magnetic Fields, Tallahassee, FL (17-19 March 2004). Ed. H. Wada and H.J. Schneider-Muntau, World Scientific, 80-90 (2005)
42. D.N. Nguyen, P.V.P.S.S. Sastry, G.M. Zhang, D.C. Knoll and J. Schwartz, "Relationship between critical current density and self-field losses of Ag-sheathed $(Bi,Pb)_2Sr_2Ca_2Cu_3O_x$ tapes," *Advances in Cryogenic Engineering Materials* **52**, International Cryogenic Materials Conference, 696 (2006)
43. D.N. Nguyen, P.V.P.S.S. Sastry and J. Schwartz, "Waveform of loss voltage in Ag-sheathed Bi2223 superconducting tape carrying ac transport current," *Advances in Cryogenic Engineering Materials* **52**, International Cryogenic Materials Conference, 869 (2006)
44. J. Schwartz, "High temperature superconductors for accelerator magnets," Proceedings of the Workshop on Accelerator Magnet Design Optimization, pp. 56-60, (2006)
45. A. Oliver, A.L. Mbaruku and J. Schwartz, "Mechanical Properties of Carbon Nanotube Reinforced Polycarbonate at Cryogenic Temperature," *Mater. Res. Soc. Symp. Proc.* **1018**, 1018-EE10-24, (2007)
46. J. Schwartz, R.P. Johnson, S.A. Kahn and M. Kuchnir, "Multi-Purpose Fiber Optic Sensors for HTS Magnets," Proceedings of the 11th European Particle Accelerator Conference, Genoa, Italy (2008)
47. S.A. Kahn, R.P. Johnson, M. Kuchnir and J. Schwartz, "High Field Superconductor for Muon Cooling," Proceedings of the 11th European Particle Accelerator Conference, Genoa, Italy (2008)
48. D. Larbalestier, E. Hellstrom, J. Jiang, F. Kametani, M. LoSchiavo, D. Myers, J. Schwartz, T. Shen and U. Trociewitz, "The Bi-2212 Conductor and Magnet Program at the National High Magnetic Field Laboratory," Workshop on Accelerator Magnet Superconductors, Design and Optimization, CERN, Geneva, Switzerland (2008)
49. M. Turenne, R.P. Johnson, F. Hunte and J. Schwartz, "Multi-Purpose Fiber Optic Sensors for High Temperature Superconductor Magnets," Proceedings of the 2009 Particle Accelerator Conference, Vancouver, Canada (2009)

50. F. Hunte, H. Song, J. Schwartz, R.P. Johnson and M. Turenne, "Fiber Bragg Optical Sensors for YBCO Applications," Proceedings of the 2009 Particle Accelerator Conference, Vancouver, Canada (2009)
51. M. Turenne, R.P. Johnson, F. Hunte, J. Schwartz and H. Song, "Multi-Purpose Fiber Optic Sensors for High Temperature Superconducting Magnets," 2009 Symposium on Fusion Engineering, San Diego (2009)
52. W.T. Nachtrab, T. Wong, X. Liu and J. Schwartz, "Effect of Insulation Materials on J_e of AgMg Sheathed Bi2212 Wire," International Cryogenic Materials Conference, Tucson (2009)
53. W.K. Chan, P. Masson, C. Luongo and J. Schwartz, "The 3D mixed-dimensional quench model of a high aspect ratio high temperature superconducting coated conductor tape," Proceedings of the COMSOL Conference, Boston (2010)
54. J. Schwartz, F. Hunte, W.K. Chan, X.F. Gou, X.T. Liu, M. Phillips, Q.V. Le, G. Naderi, M. Turenne, L. Ye, "Status of HTS magnets and the conductors they depend upon," Proceedings of the HE-LHC'10 (2010)
55. G. Flanagan, R.P. Johnston, L. Wenzel, D. Schmidt, Q. Ruan, C. Wimmer, W. K. Chan, and J. Schwartz, "Evaluation and implementation of high performance real-time signal processing for Rayleigh scattering based quench detection for high field superconducting magnets," Proceedings of the International Particle Accelerator Conference (2012)
56. J. Schwartz, "Quench in high temperature superconductor magnets," Proceedings of WAMSDO: Workshop on accelerator magnet superconductors, design and optimization, CERN, Geneva, Switzerland, 21-29 DOI 10.5170/CERN–2013–006 (2013)
57. R. Jha, G.S. Dulikravich, M. Fan, J. Schwartz, C. Koch, I.N. Egorov, C. Poloni, "A combined computational-experimental approach to design of high-intensity permanent magnetic alloys, Proceedings of the VIII Congresso Nacional de Engenharia Mecanica "CONEM2014", Sao Luis, Brazil (2014)
58. R. Jha, G.S. Dulikravich, M.J. Colaco, I.N. Egorov. C. Poloni, N. Chakraborti, M Fan, J. Schwartz, and C.C. Koch, "Multi-Objective Design and Optimization of Hard Magnetic Alloys Free of Rare Earths", MS&T15-Materials Science and Technology 2015 Conference, Columbus, Ohio, October 4-8, 2015
59. R. Jha, G.S. Dulikravich, M.J. Colaco, M. Fan, J. Schwartz, and C.C. Koch, "Magnetic Alloys Design Using Multi-Objective Optimization", ACEX2015-9th International Conference on Advanced Computational Engineering and Experimenting, Munich, Germany, June 29 – July 2, 2015
60. R. Jha, G.S. Dulikravich, N. Chakraborti, M. Fan, J. Schwartz, C.C. Koch, M.J. Colaco, C. Poloni, I.N. Egorov, "Algorithms for Design Optimization of Hard Magnetic Alloys Using Experimental Data", ICMM4-International Conference on Material Modeling, Berkeley, CA, May 27-29, 2015
61. F. Scurti and J. Schwartz, "Optical fiber distributed sensing for high temperature superconductor magnets", Proceedings SPIE 10323, 25th International Conference on Optical Fiber Sensors, 103238Q (April 23, 2017); doi:10.1117/12.22659472017
62. G. Rasic, B. Vlahovic, and J. Schwartz, "Reducing losses in magnetic thin films through nanoscale surface patterning," Proceedings of the IV Advanced Ceramics Conference, pp. 39-56 doi 10.2991/978-94-6239-213-7_4 (2017)
63. S. D. Rountree, O.J. Ohanian, A. Boulanger, D. Kominsky, M. Davis, M. Wang, K. Chen, A. Leong, J. Zhang, F. Scurti, J. Schwartz, T.E. Blue and J. Jones, "Multi-parameter fiber optic sensing for harsh nuclear environments," SPIE Defense + Commercial Sensing Conference, SPIE Proceedings, Volume 11739, Fiber Optic Sensors and Applications XVII; 117390H doi 10.1117/12.2587897 (2021)

RESEARCH AND SCHOLARLY PRESENTATIONS

Plenary and Keynote Addresses

1. *"High Field HTS Insert Coils: Status and Key Technical Issues,"* Annual Meeting of the Korean Superconductivity Society, KSS2000, Yongpyong, South Korea, August, 2000
2. "*The How & Why of High Field Superconducting Solenoids*," 20th International Conference on Magnet Technology, Philadelphia, PA, August 30, 2007
3. "*Progress Towards Superconducting Magnets Using High Temperature Superconductors: An Integrated Approach*," IEEE Conference on Applied Superconductivity and Electromagnetic Devices, Beijing, PRC, October 26, 2013
4. "*Advances in $Bi_2Sr_2CaCu_2O_x$ Superconducting Wires and Related Technologies for High Field Superconducting Magnets*," IEEE Conference on Applied Superconductivity and Electromagnetic Devices, Shanghai, PRC, November 23, 2015
5. "*Inspiring Change, Impacting Tomorrow: Arming the next generation to save our species*," Research to Action: the Science of Drawdown, State College, PA, September 16, 2019
6. "*High-Performance Built Environments to Cultivate Humane Communities*," United Nations Economic Commission for Europe, 30th Session of the Committee on Sustainable Energy, Concrete Actions to Attain Energy for Sustainable Development, September 22, 2021.
7. "Knowledge and Action: Universities for a Sustainable Age," Enniscorthy Forum Building Action Coalition 2024 Summit, April 8, 2024

Invited Lectures — Conferences and Workshops

1. *"Effects of Lithium on the Formation Temperature and Superconducting Properties of 2212 BSCCO,"* Critical Current Density and Bulk Processing of High-T_c Superconductors Workshop, Argonne National Laboratory (April 1992)
2. *"Enhanced Superconducting Behaviour in Polycrystalline 2212 BSCCO by Lithium Substitution and n+Li Reactions,"* 1992 Applied Superconductivity Conference, Chicago (August 1992)
3. *"High-T_c Magnets From Powder-in-Tube Tapes,"* 3rd World Congress on Superconductivity, Munich, Germany (September 1992)
4. *"PIT Processing: Hot-Rolling and High Strength Sheaths,"* 4th International Conference of the World Congress on Superconductivity, Orlando (June 1994)
5. *"BSCCO Conductors for High Field NMR Applications,"* NYSIS Seventh Conference on Superconductivity and Applications, Buffalo (September 1994)
6. *"Flux Pinning and Magnetic Anisotropy in Neutron Irradiated Hg-Ba-Ca-Cu-O,"* 1994 Applied Superconductivity Conference, Boston (October 1994)
7. *"Bi-Sr-Ca-Cu-O Conductor Processing for High Field Insert Magnets,"* 1995 TMS Annual Meeting, Las Vegas (February 1995)
8. *"High Temperature Superconductivity and High Magnetic Fields: Research at the National High Magnetic Field Laboratory,"* 7th U. S.-Japan Workshop on High-T_c Superconductivity, Tsukuba, Japan (October 1995)
9. *"Conductor Research and Development for High Field Nuclear Magnetic Resonance Insert Coils,"* 1995 MRS Fall Meeting, Boston (November 1995)
10. *"High Temperature Superconductors for Magnetic Suspension Applications,"* 3rd International Symposium on Magnetic Suspension Technology, Tallahassee (December 1995)
11. *"$Bi_2Sr_2CaCu_2O_x$ Conductor Preparation for Insert Coils in 20 T Magnets,"* 1996 TMS Annual Meeting, Anaheim (February 1996)
12. *"High Temperature Superconductors for Near-Term and Long-Term High Field Magnets,"* International Workshop on High Magnetic Fields, Tallahassee (March 1996)

13. *"Improvements in $Bi_2Sr_2CaCu_2O_x$ by Dopants,"* 1997 TMS Annual Meeting, Orlando (February 1997)
14. *"Synthesis Studies of (Hg,X)$Ba_2Ca_2Cu_3O_x$ Superconductors,"* International Workshop on Tl and Hg Based Superconducting Materials, Cambridge, United Kingdom (May 1997)
15. *"Improved Flux Pinning in $Bi_2Sr_2CaCu_2O_x$ Powders and Powder-in-Tube Tapes Via BaO_2 and MgO Additions,"* 1997 International Workshop on Superconductivity, Hawaii (June 1997)
16. *"Conductor Development Activities at the NHMFL,"* 8th U.S.-Japan Workshop on High-T_c Superconductivity, Tallahassee (December 1997)
17. *"High Field HTS Coil Development at the NHMFL,"* The HTS/LTS for HEP Workshop, Napa (March 1998)
18. *"Progress in HTS Systems,"* Workshop on Power Distribution and Management for Electric Ship Applications, Tallahassee (May 1999)
19. *"HTS: Its Potential for Future Magnet Technology,"* Magnet Technology 16, Sawgrass (October 1999)
20. *"Progress in High Field BSCCO Insert Coils,"* 9th U.S.-Japan Workshop on High-T_c Superconductivity, Yamanashi, Japan (October 1999)
21. *"Strain effects in 3-ply BSCCO conductors: abr compression,"* Office of Naval Research Program Review (May 2000).
22. *"Progress in the Development of a 5 T Bi-2212 High Field Insert Magnet,"* Cryogenic Engineering Conference/International Cryogenic Materials Conference, Madison (July 2001)
23. *"Stability and Quench Protection of YBCO Wires and Coils,"* U.S. Department of Energy, Energy Efficiency and Renewable Energy, Superconductivity Program for Electrical Power Systems, 2002 Annual Peer Review, Washington, D.C. (July 2002)
24. *"Magneto-Optical Imaging of Strain-Induced Cracks in BSCCO and YBCO Conductors,"* 2002 Applied Superconductivity Conference, Houston (August 2002)
25. *"HTS Materials R&D in the Center for Advanced Power Systems: Strain Effects and AC losses in Bi-Sr-Ca-Cu-O and MgB_2 Superconductors,"* CAPS Workshop, Tallahassee (August 2002)
26. *"Stability and Quench Propagation of HTS Conductors,"* 2002 CHATS Workshop, Karlsruhe, Germany (September 2002)
27. *"Normal Zone Creation and Propagation in YBCO Coated Conductors*," U.S. Department of Energy Coated Conductor Workshop, St. Petersburg, FL (January 2003)
28. *"Magneto-Optical Imaging with Strain,"* Air Force Office of Scientific Research Coated Conductor Program Review, St. Petersburg, FL (January 2003)
29. *"10 Things I Hate about Coated Conductors,"* MURI Coated Conductor Workshop, Madison, WI (June 2003)
30. *"Stability and Quench Protection of YBCO Wires and Coils*" U.S. Department of Energy, Efficiency and Renewable Energy, Superconductivity Program for Electrical Power Systems, 2003 Annual Peer Review, Washington, D.C. (July 2003)
31. *"Magneto-Optical Imaging of High Temperature Superconductors Under Tensile Strain*" NATO Advanced Research Workshop on Magneto Optical Imaging, Oystese, Norway (August 2003)
32. *"Bi-2212 High Field Insert Coils,"* 2003 Low Temperature Superconductor Workshop, Monterey, CA (November 2003)
33. *"Magnetic Field Processing and Growth,"* National High Magnetic Field Laboratory Retreat, Tallahassee, FL (January 2004)

34. *"Effects of Magnetic Field Processing on the Microstructure and Properties of $Bi_2Sr_2CaCu_2O_8$ Superconducting Tapes,"* International Workshop on Materials Analysis & Processing in Magnetic Fields, Tallahassee, FL (March 2004)
35. *"Superconductivity,"* Project Superconductivity Teacher-Scientist Workshop, Jacksonville, FL (October 2004)
36. *"Quench Protection & Stabilization: How Conductors Respond to Disturbances,"* U.S. Department of Energy Wire Workshop, St. Petersburg, FL (January 2005)
37. "*Quench Behavior in Coated Conductors*," AFOSR Coated Conductor Program Review, Orlando, FL (January 2005)
38. "*Experimental Studies of Normal Zone Behavior in Coated Conductors*," Quench Protection Workshop, Orlando, FL (January 2005)
39. *"High Field HTS Magnets: Past, Present and Future … on the Road to 30 T,"* 30 T High Resolution Magnet for NMR Spectroscopy and Imaging Workshop, Tallahassee, FL (July 2005)
40. *"High Temperature Superconductors for Accelerators,"* Workshop on Accelerator Magnet Design and Optimization, Geneva, Switzerland (April 2006)
41. "*Quenching and Fatigue in As-Synthesized and Damaged YBCO Coated Conductors or Understanding Failure is the Path to Success!*" Stanford-Wisconsin Workshop on Coated Conductors, Palo Alto, CA (April 2006)
42. "*Engineering Issues for YBCO Coated Conductors: Electromechanical and Quench Behavior*," International Conferences on Modern Materials & Technologies, Acireale, Sicily, Italy (June 2006)
43. "*Relationships Between Conductor Damage, Quenching & Electromechanical Behavior in YBCO Coated Conductors (and Bi2212 too)*," 2006 Applied Superconductivity Conference, Seattle (August 2006)
44. "*Superconductivity,"* Project Superconductivity Teacher-Scientist Workshop, Seattle, WA (September 2006)
45. "*Quench Propagation Behavior & Other Failure Issues in Bi2212*," Bi2212 Workshop/LTSW, Tallahassee, FL (November 2006)
46. "*Next Generation Superconductors for Accelerator Magnets*," 2007 Particle Accelerator Conference, Albuquerque, NM (June 2007)
47. "*The How and Why of High Field Superconducting Solenoids*," 20th International Conference on Magnet Technology (plenary), Philadelphia, PA (August 2007)
48. "*Issues for High Field Superconducting Magnets using High Temperature Superconductors*," 2007 European Conference on Applied Superconductivity, Brussels, Belgium (September 2007)
49. *"$Bi_2Sr_2CaCu_2O_x$ Coils: Past and Present (and Future*!)," Pioneering High Magnetic Fields Symposium, Tallahassee, FL (March 2008)
50. *"The Next Generation of High Field Magnets at the National High Magnetic Field Laboratory & Magnetic Field Processing of $Bi_2Sr_2CaCu_2O_x$,"* 3rd International Workshop on Materials Analysis and Processing in Magnetic Fields, Tokyo, Japan (May 2008)
51. *"Status of HTS Magnets, and the conductors they depend upon*," EuCARD - HE-LHC'10 AccNet mini-workshop on a "High-Energy LHC", Malta (October 2010
52. *"The Role of the Nanoscale in the Success of Large-Scale High Temperature Superconductors,"* International Symposium on Advances in Nanostructured Materials and Applications, Materials Science & Technology, Columbus (October 2011)
53. "*HTS for High Field HEP Magnets: Are we half-way there yet?"* Low Temperature High Field Superconductor Workshop, Providence, Rhode Island (November 2011)

54. "*Quench in HTS Magnets"* Workshop on Accelerator Magnet, Superconductor Design and Optimization, CERN, Geneva, Switzerland (January 2013)
55. "*Quench Protection Modeling*" Naval Applied Superconductivity Program Review, Philadelphia, PA (June 2013)
56. "*High Field Magnets using High Temperature Superconductors: Progress and Challenges*," 2013 European Conference on Applied Superconductivity, Genova, Italy (September 2013)
57. "*Ag-Al alloys: An Enabling Technology for $Bi_2Sr_2CaCu_2O_x$ Superconducting Wires*," IEEE International Conference on Applied Superconductivity and Electromagnetic Devices, Beijing, China (October 2013)
58. "*Understanding Degradation and Failure in $Bi_2Sr_2CaCu_2O_x$ Conductors through Experiment and Computation*," Spring Meeting of the Materials Research Society, San Francisco (April 2014)
59. "*Direct and Inverse Design Optimization of Magnetic Alloys with Minimized Use of Rare Earth Elements*," Aerospace Materials for Extreme Environments, Arlington, VA (May 2014)
60. "*Key Issues for Advancing High Field Superconducting Magnets: Quench Detection, Degradation Limits, and Ancillary Technology Development*," 2014 Kyoto Workshop on HTS Magnet Technology for High Energy Physics – The 2nd Workshop on Accelerator Magnet in HTS, Kyoto, Japan (November 2014)
61. "*Optical Fibers for Quench Detection*," 3rd Workshop on Accelerator Magnets in HTS (WAMHTS-3), Lyon, France (September 2015)
62. "*Heterogeneous Materials Systems for Reconfigurable Electronics via Templating*," 2016 AFOSR Reconfigurable Electronics Working Group, Arlington, VA (May 2016)
63. "*Rayleigh-scattering Interrogated Optical Fibers (RIOF) for HTS Quench Detection & Other Sensing Needs*," U.S. Magnet Development Program Workshop, Napa, CA (February 2017)
64. "*Rayleigh-scattering Interrogated Optical Fibers (RIOF) for Quench Detection*," The 2017 Low Temperature/High Field Superconductor Workshop LTSW/HFSW2017, Santa Fe, NM (March 2017)
65. "*Rayleigh-backscattering Interrogated Optical Fiber Sensors for Superconducting Magnets,*" Naval Applied Superconductivity Program Review, Philadelphia, PA (April 2018)
66. "*A mixed-dimensional delamination structural model for general laminated composites including REBCO coated conductors,*" 6th International Workshop on Numerical Modeling of High Temperature Superconductors, Caparica, Portugal (June 2018)
67. "*Advancing Gender Equity in Education for the Future Engineering Workforce,*" 2019 Spring Meeting of the Materials Research Society, Sympoisum on High Impact Practice – Increasing Ethnic and Gender Diversification in Engineering Education, Phoenix, AZ (April 2019)
68. *"125 Years of Engineering Education: The Foundation of Our Future,"* 2021 American Council of Engineering Companies of Pennsylvania, virtual delivery (May 2021)
69. *"Penn State College of Engineering: Engineering Equity Initiative,"* Engineering CAS Member Summit, virtual delivery (July 2021)

Seminars

1. *"High Field Superconducting Magnets for Fusion,"* University of Illinois at Urbana, Department of Nuclear Engineering (September 1989)
2. *"A Superconducting Tour of Japan – Applied Superconductivity Research in Japanese Government, Private and University Research,"* University of Illinois at Urbana, Department of Nuclear Engineering (October 1990)
3. *"Japanese Research in Superconducting Materials and Magnet Applications, A View from Within (and Without), "*Argonne National Laboratory, Energy Systems Division (November 1990)

4. *"Superconducting Magnetic Levitation (MAGLEV) – High Speed Transportation for the Year 2000,"* Champaign County Chamber of Commerce, Transportation Committee (December 1991)
5. *"Effects of Li Doping on $Bi_2Sr_2CaCu_2O_x$,"* National Research Institute for Metals, Tsukuba, Japan (March 1992)
6. *"Progress and Directions in High-T_c Superconducting Materials and Magnets,"* Florida State University, Department of Mechanical Engineering and the National High Magnetic Field Laboratory (December 1992)
7. *"The Superconductivity Revolution - Are We Near The Promised Land or Tales from the Front,"* Los Alamos National Laboratory, Superconductivity Technology Center (July 1993)
8. *"High-T_c Superconductivity at the National High Magnetic Field Laboratory,"* National Research Institute for Metals, Tsukuba, Japan (March 1994)
9. *"Superconductivity Research at the National High Magnetic Field Laboratory,"* American Institute of Chemical Engineers, (September 1994)
10. *"Towards a Practical High-T_c Superconducting Conductor,"* Florida State University Materials Research and Technology Center, (February 1995)
11. *"BiSrCaCuO and HgBaCaCuO Research at the National High Magnetic Field Laboratory,"* Argonne National Laboratory, Energy Technology Division (July 1995)
12. *"The Worst (Best) Talk You'll Ever Hear (Give) ... The Dos and Don'ts of a Scientific Seminar,"* National High Magnetic Field Laboratory, Florida State University (December 1995)
13. *"Applied HTS Research and Development Activities at the National High Magnetic Field Laboratory,"* National Research Institute for Metals, Tsukuba, Japan (October 1997)
14. *"High Field HTS Insert Coils: Status and Key Technical Issues,"* Korean Institute of Machinery and Materials, South Korea (August 2000)
15. *"YBCO Coated Conductor Development: Magneto-Optical and Microstructural Characterization of Coated Conductors,"* AFOSR Plasma Dynamics for Aerospace Applications, Theme Kick-Off Meeting, Wright-Patterson Air Force Base (May 2001)
16. *"CAPS HTS Programs: Strain Effects and AC losses in Bi-Sr-Ca-Cu-O Superconductors,"* CAPS Industrial Advisory Board Meeting, Tallahassee (May 2002)
17. *"MOI of YBCO, TBCCO and HBCCO w/ and w/out strain,"* AFOSR Coated Conductor Review, Madison (May 2002)
18. *"An Overview of the Center for Advanced Power Systems and its HTS Activities: Conductor R&D,"* American Superconductor Corporation (May 2002)
19. *"High Temperature Superconductors for Magnet Applications: Materials, Mechanics, and Systems,"* Department of Mechanical Engineering, FAMU-FSU College of Engineering (October 2002)
20. *"What We Did Over Our Summer Vacation, or ... How to Break World Records with High Field HTS Insert Magnets,"* Department of Electrical Engineering, FAMU-FSU College of Engineering (November 2003)
21. *"HTS R&D for Magnet Applications at Florida State University,"* Slovakian Academy of Sciences, Institute for Electrical Engineering (November 2003)
22. *"Superconductivity,"* REU & RET Colloquium, National High Magnetic Field Laboratory (June 2005)
23. *"The Best (Worst) Talk You'll Ever Give: The Dos and Don'ts of a Scientific Seminar,"* REU & RET Colloquium, National High Magnetic Field Laboratory (June 2005)

24. *"High Temperature Superconductors: How they fail, and how they might yet succeed*," Rensselaer Polytechnic Institute, Department of Mechanical, Aerospace and Nuclear Engineering (August 2005)
25. "*High Temperature Superconductors: How they fail, and how they might yet succeed*," Georgia Institute of Technology, Materials Council Seminar Series (October 2005)
26. "*High Temperature Superconductors: How they fail, and how they might yet succeed*," Arizona State University, Fulton School of Engineering (February 2006)
27. "*High Temperature Superconductors: How they fail, and how they might yet succeed*," Polytechnic University (Brooklyn), Department of Mechanical Engineering (March 2006)
28. "*What Limits the Performance & Lifetime of Superconducting Materials & Systems?*" Georgia Institute of Technology, Department of Electrical and Computer Engineering (September 2007)
29. "*21st Century Challenges and Opportunities in Nuclear Engineering,*" Purdue University, School of Nuclear Engineering (February 2009)
30. "*Advanced Materials for a Sustainable Energy Future: How Advanced Oxides Are Helping to Create the 21st Century Smart Grid,*" Virginia Commonwealth University, Department of Mechanical Engineering (February 2009)
31. *"What Limits the Performance & Lifetime of Superconducting Materials & Systems?*" Tulane University, Department of Physics and Engineering Physics (March 2009)
32. *"What Limits the Performance & Lifetime of Superconducting Materials & Systems?*" University of Delaware, Department of Mechanical Engineering (March 2009)
33. *"What Limits the Performance & Lifetime of Superconducting Materials & Systems?*" North Carolina State University, Department of Materials Science and Engineering (April 2009)
34. *"What Limits the Performance & Lifetime of Superconducting Materials?*" University of Twente (Netherlands), Low Temperature Division (June 2009)
35. "*Understanding performance limiting issues of superconducting materials for high current, high magnetic field devices*," ASM International, Carolinas Central Chapter (September 2010)
36. "*Understanding performance limiting issues of superconducting materials for high current, high magnetic field devices*," MRS Local Chapter meeting, Raleigh, NC (November 2010)
37. "*Understanding performance limiting issues of superconducting materials for high current, high magnetic field devices*," Virginia Tech, Department of Materials Science and Engineering, Blacksburg, VA (November 2011)
38. "*Quench detection and protection: the final hurdles to wide-spread implementation of HTS-based magnet systems,*" University of Houston, Texas Center for Superconductivity at the University of Houston, Houston, TX (May 2013)
39. "*25+ years of high temperature superconductivity: the long road from discovery to magnet systems*," Universite Paris Sud, Centre de Spectrometrie Nucleaire et de Spectrometrie de Masse, Paris, France (June 2013)
40. "*25+ years of high temperature superconductivity: the long and winding road from discovery to magnet systems,*" Drexel University, Department of Materials Science and Engineering, Philadelphia, PA (May 2014)
41. "*25+ years of high temperature superconductivity: the long and winding road from discovery to magnet systems,*" University of Texas, Texas Materials Institute, Austin, TX (September 2015)
42. "*Redefining engineering in the modern age: a call to action,*" University of South Florida, Eminent Scholar Distinguished Lecture Series, Tampa, FL (March 2018)
43. "*Redefining engineering in the modern age: a call to action,*" *American Council of Engineering Companies of Pennsylvania,* 2018 Spring Conference, Harrisburg, PA (May 2018)

44. "*Project Drawdown at Penn State University*," Science on Tap, State College, PA (September 2019)

RESEARCH SUPERVISION

Graduate Student Supervision (Major Professor), Graduated (forty-six students (sixteen female, seven underrepresented minorities); nineteen M.S. & thirty three Ph.D.)

- Earle E. Burkhardt, University of Illinois Urbana, Department of Nuclear Engineering
  - M.S. 05/93, *"*Superconducting Magnets for Small Scale Energy Storage Systems and Electrodynamic Magnetic Levitation Systems*"*
  - Ph.D. 03/98, *"*Stability of High-T_c Superconducting Conductors Using the Finite Element Method*"*
- James L. Hill, University of Illinois Urbana, Department of Nuclear Engineering
  - M.S. 12/93, "Analysis of the Modified Square Toroid, A Force-Reduced Electromagnet"
- Shiming Wu, University of Illinois Urbana, Department of Nuclear Engineering
  - Ph.D. 05/94, "Processing and Microstructural Characterization of Li Doped and Undoped Polycrystalline $Bi_2Sr_2CaCu_2O_x$"
- Bruce C. Amm, University of Illinois Urbana, Department of Mechanical Engineering
  - M.S. 12/93, *"*Optimization of the Force-Reduced Modified Square Toroid Magnet Design*"*

  Florida State University, Department of Mechanical Engineering
  - Ph.D. 12/96, "An Optimized Superconducting Toroidal Magnet Using a Force-Reduced Winding Scheme"
- Jiyou Guo, University of Illinois at Urbana, Department of Materials Science and Engineering
  - M.S. 5/94, "Microstructural Development and Superconducting Properties of Hot-Rolled Ag and Ag(Cu)-Sheathed $Bi_2Sr_2CaCu_2O_x$ Tapes"
- Elizabeth A. Scholle (Carle), University of Illinois Urbana, Department of Nuclear Engineering
  - Ph.D. 3/95, "Impact of Vibration-Induced Disturbances on Superconducting Magnets"
- Kathleen Amm, Florida State University, Department of Physics
  - M.S. 8/96; Ph.D. 12/97, "Synthesis and Characterization of $HgBa_2Ca_{n-1}Cu_nO_x$ Superconductors on Metallic Substrates"
- Sawako Nakamae, Florida State University, Department of Physics
  - M.S. 08/96; Ph.D. 12/98, "Magnetothermal Conductivity of $Bi_2Sr_2Ca_nCu_{n+1}O_x$ Bulk Superconductors"
- Wangshui Wei, Florida State University, Department of Mechanical Engineering
  - Ph.D. 03/98, "Effects of Oxide Additions to $Bi_2Sr_2CaCu_2O_x$: Phase Evolution and Flux Pinning"
- Li Ying, Florida State University, Department of Mechanical Engineering
  - M.S. 08/99, "Synthesis and Properties of Pb-Doped $HgBa_2Ca_2Cu_3O_x$ Superconductors"
- Ulf Trociewitz, Aachen University of Technology, Applied Physics
  - Ph.D. 05/01, "The Impact of Chemically Active Additions on Phase Formation and Superconducting Properties of Partial Melt Processed $Bi_2Sr_2CaCu_2O_x$"
- Hiranmayi Palanki, Florida State University, Department of Mechanical Engineering
  - M.S. 12/02, "Critical Current Variability and Thermal Quench Studies on High Temperature Superconducting Tapes"
- Daniel C. van der Laan, University of Twente, Applied Physics & Low Temperature Division

- Ph.D. 01/04, “Flux Pinning and Connectivity in Polycrystalline High-Temperature Superconductors”

- Oscar Castillo, Florida State University, Department of Mechanical Engineering
  - M.S. 03/04, “Microstructural and Superconducting Properties of V-doped MgB_2 Bulk and Wires”
- Jianhua Su, Florida State University, Department of Mechanical Engineering
  - Ph.D. 03/04, “Growth and Characterization of Mercurocuprate Superconductors on Silver”
- Bin Xu, Florida State University, Department of Mechanical Engineering
  - M.S. 06/04, “Study of the Magnetic Field Dependence of the Critical Current of $Bi_2Sr_2CaCu_2O_{8+x}$ and $(Bi,Pb)_2Sr_2Ca_2Cu_3O_{10+x}$ Superconducting Tapes”
- Abdallah Mbaruku, Florida State University, Department of Mechanical Engineering
  - Ph.D. 03/06, “Electromechanical and Fatigue Properties of As-Manufactured and Quench Damaged YBCO Coated Conductor”
- Jamaa Bouhattate, Florida State University, Department of Mechanical Engineering
  - Ph.D. 06/06, “Modeling Texture Evolution in Polycrystalline Materials using Spherical Harmonics”
- Gary Adam Merritt, Florida State University, Department of Mechanical Engineering
  - M.S. 07/06, “Proof of Principle for $Bi_2Sr_2CaCu_2O_{8+x}$ React Wind Sinter Magnet Manufacturing”
- Manuel Ramos, Florida A&M University, Department of Mechanical Engineering
  - M.S. 07/06, “Low Aspect Ratio $Bi_2Sr_2CaCu_2O_{8+x}$/AgMg Wires Processed in High Magnetic Field”
- Giulio Mulazzani, University of Bologna (Italy), Department of Electrical Engineering
  - M.S. 2006, “Studio sperimentale della stabilita termica di nastri superconduttori della "seconda generzaione”
- Doan Ngoc Nguyen, Florida State University, Department of Physics
  - Ph.D. 5/07, “Alternating current loss characteristics in $(Bi,Pb)_2Sr_2Ca_2Cu_3O_{10}$ and $YBa_2Cu_3O_{7-}$ superconducting tapes”
- Anita Oliver, Florida State University, Department of Mechanical Engineering
  - M.S. 11/07, “Mechanical and electrical properties of carbon nanotube reinforced polycarbonate at liquid nitrogen temperature”
- Xiaorong Wang, Florida State University, Department of Electrical and Computer Engineering
  - Ph.D. 12/07, “Quench behavior of $YBa_2Cu_3O_{7-}$ coated conductors”
- Timothy Effio, Florida State University, Department of Mechanical Engineering
  - M.S. 06/08, “Quench induced degradation in $Bi_2Sr_2CaCu_2O_{8+x}$ at 4.2 K”
- Samuel T. Adedokun, Florida A&M University, Department of Mechanical Engineering
  - Ph.D. 08/08, “Effects of magnetic field heat treatment on heavily deformed aluminum alloy 6061”
- Makita R. Phillips, Florida A&M University, Department of Mechanical Engineering
  - M.S. 04/09, “Influence of turn-to-turn insulation on quench propagation in YBCO coated conductors”

  North Carolina State University, Department of Mechanical and Aerospace Engineering
  - Ph.D. 06/14, “Effect of Alternative Insulation Materials on Quench Propagation in $ReBa_2Cu_3O_{7-\delta}$ Coils”

- David Myers, Florida State University, Department of Mechanical Engineering
  - M.S. 04/09, "Characterization of $Bi_2Sr_2CaCu_2O_x$/Ag-alloy conductor samples extracted from wind and react solenoids"
- Michael LoSchiavo, Florida State University, Department of Mechanical Engineering
  - M.S. 04/09, Florida State University, "Processing Issues of $Bi_2Sr_2CaCu_2O_8$ Round Wire Involving Leakage and Alumino Silicate Insulation"
- Hubertus W. Weijers, University of Twente, Applied Physics & Low Temperature Division
  - Ph.D. 06/09, "High-temperature superconductors in high-field magnets"
- Currently: Senior Principal Engineer, Magnet Systems, Robinson Research Institute, Wellington, Tengming Shen, Florida State University, Department of Electrical and Computer Engineering
  - Ph.D. 07/10, "Processing, microstructure, and critical current density of Ag-sheathed $Bi_2Sr_2CaCu_2O_x$ multifilamentary round wire"
- Honghai Song, Florida State University, Department of Electrical and Computer Engineering
  - Ph.D. 07/10, "Microscopic observations of quenching and the underlying causes of degradation in $YBa_2Cu_3O_{7-\delta}$ Coated Conductor"
- Sarah Haney, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 12/12, "Investigation of Low Temperature, Atomic-Layer-Deposited Oxides on 4H-SiC and their Effect on the SiC/SiO_2 Interface"
- Safoura Seifikar, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 03/13, "Texture and Magnetocrystalline Anisotropy in $NiFe_2O_4$ Thin Films for Application in Magnetoelectric $NiFe_2O_4/Pb[Ti_{0.52},Zr_{0.48}]O_3$ Composites"
- Amir Kajbafvala, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 12/13, "High strength silver/alumina sheath for $Bi_2Sr_2CaCu_2O_{8+x}$ conductor"
- Quang Van Le, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 3/14, "Relationship between microstructure and mechanical properties in $Bi_2Sr_2CaCu_2O_x$ round wires using peridynamics simulation"
- Goran Rasic, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 3/14, "Nanoscale Surface Patterning and Coercivity Reduction in $NiFe_2O_4$ Thin Films"
- Golsa Naderi, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 7/14, "Understanding processing, microstructure and transport relationships of $Bi_2Sr_2CaCu_2O_x$/Ag round wires"
- Yun Zhang, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 7/15, "Oxide and metallic precursor powders for $Bi_2Sr_2CaCu_2O_x$/Ag round wires"
- Yi-Fang Lee, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 8/15, "Fabrication and Properties of Topological and Two-dimensional Thin Film Heterostructures"
- Liyang Ye, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 10/15, "Quench Behavior and Degradation Limit of Ag-sheathed $Bi_2Sr_2CaCu_2O_x$ Round Wires"
- Min Fan, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 6/16, "On the Formation and Evolution of Cu-Ni-rich Bridges of Alnico Alloys with Thermomagnetic Treatment and Tempering"
- Sam Rogers, North Carolina State University, Department of Materials Science and Engineering

  - Ph.D. 11/16, "Effects of Tensile Fatigue on Critical Current and n-value of (RE)$Ba_2Cu_3O_{7-x}$ Superconductors"
- Weston Straka, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 03/17, "Chemical Solution Deposition Based Synthesis of High Symmetry Phase of Hafnium Dioxide Thin Films"
- Taryn Kittel, North Carolina State University, Department of Materials Science and Engineering
  - M.S. 05/17
- Youness Alvandi Tabrizi, North Carolina State University, Department of Mechanical and Aerospace Engineering
  - Ph.D. 06/18, "Electric Control of Magnetization in Biferroic Heterostructures with Patterned Interfaces: a Phase-Field Micromagnetic Study"
- Federico Scurti, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 06/19, "*In-Situ* Distributed Sensing for High Temperature Superconductor Magnets based on Rayleigh-backscattering Interrogated Optical Fibers"
- Chris Velez, Pennsylvania State University, Department of Mechanical Engineering
  - M.S. 07/20, "Quench Detection Logic for High Temperature Superconducting Magnets Based on Distributed Optical Fiber Sensing"
- Alexandria Cruz, North Carolina State University, Department of Materials Science and Engineering
  - Ph.D. 01/21, "Investigating the interface of cobalt ferrite and hafnia"

Graduate Student Committees (not Major Professor)
- Farhad Booshaghi, Ph.D. Mechanical Engineering, FSU, 1997
- Daryl J. Hartley, Ph.D. Physics, FSU, 1998
- John Panek, Ph.D. Mechanical Engineering, FSU, 1998
- Zhongyu Chen, Ph.D. Mechanical Engineering, FSU, 2000
- Jason Trembley, M.S. Mechanical Engineering, FSU, 2003
- Yeon Suk Choi, Ph.D. Mechanical Engineering, FSU, 2004
- Xu Wang, Ph.D. Electrical Engineering, FSU, 2004
- Gilberto Alexandre Castello Branco, Ph.D. Mechanical Engineering, FSU, 2005
- Frederic Trillaud, Ph.D., CEA/SACLAY France, 2005
- Antoine Jerome Raoul Berret Jr., M.S. Mechanical Engineering, FSU, 2005
- Gail Jefferson, Ph.D. Mechanical Engineering, FAMU, 2005
- Rasheemah Burrell, Ph.D. Mechanical Engineering, FAMU, 2005
- Mohit Mathur, M.S. Mechanical Engineering, FSU, 2006
- Jingping Chen, Ph.D. Mechanical Engineering, FSU, 2006
- Kai Huang, Ph.D. Mechanical Engineering, FSU, 2007
- Lewei Qian, Ph.D. Mechanical Engineering, FSU, 2007
- Ting Xu, Ph.D. Mechanical Engineering, FSU, 2007
- Steven T. Downey, Ph.D. Mechanical Engineering, FSU, 2008
- Sladana Lazic, M.S. Mechanical Engineering, FSU, 2008
- Haomin Lin, Ph.D. Mathematics, FSU, 2008
- Shalini Gupta, Ph.D. Electrical & Computer Engineering, Georgia Tech, 2009
- Aaron Johnston-Peck, Ph.D. Materials Science and Engineering, NCSU, 2011
- Elizabeth Paisley, Ph.D. Materials Science and Engineering, NCSU, 2012
- Zach Lampert, Ph.D. Materials Science and Engineering, NCSU, 2012

- Ryan D. Hodges, Ph.D. Electrical Engineering, NCSU, 2014
- Peiman Shahbeigi Roodposhti, Ph.D. Materials Science and Engineering, NCSU, 2015
- John A. Medford, M.S. Materials Science and Engineering, NCSU, 2015
- Raj Kumar, Ph.D. Materials Science and Engineering, NCSU, 2015

Long-term Visitors Hosted

- Professor Kristian Fossheim, Trondheim University, Norway
- Professor Shimone Reich, Weizmann Institute, Israel
- Professor Yutaka Yamada, Tokai University, Japan
- Dr. Jaimoo Yoo, Korean Institute of Metallurgy and Mining, South Korea
- Professor Nasser Hamdan, King Fahad University, Saudia Arabia
- Professor Hiroshi Maeda, Kitami Institute, Japan
- Sylvain Boutemy, Toulouse University, France
- Beatrice Boutemy, Toulouse University, France
- Arno Godeke, University of Twente, Netherlands
- Hans van Eck, University of Twente, Netherlands
- Frederic Trillaud, CEA/SACLAY, France
- Dr. Pavol Usak, Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia
- Dr. Philippe Vanderbemden, Department of Electrical Engineering and Computer Science, Université de Liège, Belgium
- Dr. Andreas Heinrich, University of Augsburg, Department of Physics, Germany
- Dr. Marco Breschi, University of Bologna, Department of Electrical Engineering, Italy
- Giulio Mulazzani, University of Bologna, Department of Electrical Engineering, Italy
- Morgan Poitevin, Univ. of La Rochelle, Department of Materials Science and Engineering, France
- Antoine Guillou, Univ. of La Rochelle, Department of Materials Science and Engineering, France
- Dr. Xiaofan Gou, Hohai University, China
- Davide Cruciani, University of Bologna, Department of Electrical Engineering, Italy
- Shivendra Kumar, Indian Institute of Technology Kanpur
- Federico Scurti, University of Bologna, Department of Electrical Engineering, Italy
- Dr. Jun Zhou, Lanzhou University, College of Civil Engineering and Mechanics, China
- Yawei Wang, Shanghai Jiao Tong University, China
- Peifeng Gao, Lanzhou University, College of Civil Engineering and Mechanics, China
- Shijian Yin, Dilian University of Technology, School of Materials Science and Engineering, China
- Professor Kyu Jeong Song, Jeonbuk National University, Physics Department, Korea
- Professor Wentao Wang, Southwest Jiaotong University, China

Post-doctoral Research Fellows Supervised

- Joerg Kessler, 01/94 – 04/96
- Yang Ren Sun, 03/94 – 07/96
- Christian Wolters, 03/94 – 09/96
- Bruce C. Amm, 12/96 – 11/97
- P.V.P.S.S. Sastry, 08/96 –10/99
- Qingyu Hu, 09/97 – 08/99
- Jo Moore, 03/98 – 07/98
- Ulf Trociewitz, 01/01 – 01/04
- Isaac Rutel, 08/02 – 05/04
- Guomin Zhang, 11/03 – 04/06

- Abdallah Mbaruku, 03/06 – 02/08
- Xiaotao Liu, 04/06 – 04/12
- Wan-Kan Chan, 05/08 – 8/17 (promoted to Research Assistant Professor)
- Frank Hunte, 01/09 – 12/09
- Gang Yang, 06/09 – 08/10
- Sasha Ishmael, 10/11 – 10/15
- Golsa Naderi, 08/14 – 10/16
- Menghui Li, 02/15 – 02/16
- Weston Straka, 03/17 – 10/17
- Patrick Lomenzo, 10/17 – 9/18
- Federico Scurti, 08/19 – 3/22