

Committee on Energy and Commerce
U.S. House of Representatives
Witness Disclosure Requirement - "Truth in Testimony"
Required by House Rule XI, Clause 2(g)(5)

1. Your Name: Thomas Zacharia		
2. Your Title: Director, Oak Ridge National Laboratory; President and CEO, UT-Battelle, LLC		
3. The Entity(ies) You are Representing: Oak Ridge National Laboratory		
4. Are you testifying on behalf of the Federal, or a State or local government entity?	Yes	No x
5. Please list any Federal grants or contracts, or contracts or payments originating with a foreign government, that you or the entity(ies) you represent have received on or after January 1, 2015. Only grants, contracts, or payments related to the subject matter of the hearing must be listed. FY 2015: UT-Battelle, LLC, \$1.45B contract with the U.S. Department of Energy for management and operation of Oak Ridge National Laboratory FY 2016: UT-Battelle, LLC, \$1.64B contract with the U.S. Department of Energy for management and operation of Oak Ridge National Laboratory FY 2017: UT-Battelle, LLC, \$1.65B contract with the U.S. Department of Energy for management and operation of Oak Ridge National Laboratory FY 2018: UT-Battelle, LLC, \$1.68B contract with the U.S. Department of Energy for management and operation of Oak Ridge National Laboratory		
6. Please attach your curriculum vitae to your completed disclosure form.		

Signature:

Date: 1/5/2018

Thomas Zacharia

Director, Oak Ridge National Laboratory

As director of Oak Ridge National Laboratory (ORNL), Dr. Thomas Zacharia oversees an extensive portfolio of basic and applied research and development (R&D) conducted for the U.S. Department of Energy (DOE), other federal agencies, and other public and private sponsors. He leads ORNL in the execution of its mission of delivering scientific discoveries and technical breakthroughs that accelerate the development and deployment of innovative solutions in clean energy and global security, creating economic opportunity for the nation.

Professional Experience

1987–present **Oak Ridge National Laboratory** | Oak Ridge, TN 37831

2017–present Director, Oak Ridge National Laboratory

Leads DOE's largest and most diverse multiprogram research laboratory, with an annual budget in excess of \$1.6 billion and more than 4,500 staff. Directs the application of an exceptionally broad set of core capabilities to the solution of compelling problems in science and technology, exploiting ORNL's signature strengths in materials science and engineering, computing and computational sciences, neutron science, and nuclear science and technology to deliver mission outcomes. Oversees the operation of a nuclear reactor and a high-power accelerator; classified activities; and a complex array of research facilities and construction projects. Guides the development and execution of plans to ensure the future of the Laboratory as one of the world's premier research institutions, sustained by a strong science culture. Ensures safe, efficient, effective, and secure operations and business practices.

2009–2017 **Deputy Director for Science and Technology**

(on leave of absence, September 2012–April 2015)

Led the development of objectives, integrated strategies, and tactics to optimize resource alignment and maximize performance in accomplishing the Laboratory Agenda. Developed and led cross-cutting research initiatives and research partnerships and assured integration of research and operations to minimize overlap, eliminate duplication of effort, and maximize productivity. Worked collaboratively across ORNL, throughout the federal government, and with other key stakeholders and organizations to further the advancement of ORNL's mission and objectives. Served as an ambassador and spokesperson for ORNL, communicating priorities, positions, and initiatives, incorporating the views and needs of key stakeholders. Highlights:

- Led the acquisition and deployment of three petascale computing systems, followed by approval from DOE to proceed with a plan to advance to the exascale.

- Led a successful competition for DOE’s first Energy Innovation Hub, the Consortium for Advanced Simulation of Light Water Reactors.
- Spearheaded a reorganization of ORNL to strengthen its translational energy programs, resulting in the establishment of the Energy and Environmental Sciences Directorate (EESD) and the Nuclear Science and Engineering Directorate.
- Led and managed leadership transitions at SNS and in EESD to align organizations with mission outcomes and customer expectations.
- Joined with Centers for Medicare and Medicaid Services (CMS) Administrator Marilyn Tavenner and Senator Lamar Alexander to establish a national data infrastructure for CMS for fraud detection and cost control; this infrastructure led to the selection of ORNL as the provider of the data infrastructure for the Veterans Administration’s Million Veterans Program.
- Initiated the Launch Program (now the Technology Innovation Program) to enable technology incubation and acceleration of ORNL technologies.
- Developed new roles for ORNL in advanced manufacturing, carbon fiber composites R&D, climate change science, and cyber security. Initiated the Institute for Advanced Composites Manufacturing Innovation (IACMI), with ORNL as a founding partner.
- Established GridEye, an ORNL program that provides situational awareness of the U.S. electric grid.
- Established, in collaboration with Dr. David Millhorn and Tennessee Governor Phil Bredesen, the Center for Interdisciplinary Graduate Research and Education, a partnership between ORNL and the University of Tennessee–Knoxville (UTK) that leverages the facilities, scientists and programs at ORNL; in parallel, strongly supported increasing the number of joint faculty and Governor’s Chairs with UTK.
- Established the ORNL Postdoctoral Program to strengthen the science and technology pipeline through strategic selection of highly qualified early-career researchers.
- Streamlined ORNL’s Strategic Hire and Distinguished Fellowship programs to attract a diverse pool of extraordinary established and early-career scientists to advance the Laboratory’s research agenda.
- Inspired enhancements in ORNL technology transfer programs and activities, leading to the streamlining of processes for engaging industry and to additional opportunities for ORNL researchers to engage in entrepreneurial activities.

2001–2009

Associate Laboratory Director for Computing and Computational Sciences

Led ORNL’s agenda in high-performance computing to advance science, energy security, sustainable development and national security. Transformed ORNL into a global leader in computing, thus greatly increasing its ability to support national priorities in science, energy and national security. In this capacity:

- Founded, organized, and assembled a new Computing and Computational Sciences Directorate (CCSD) with a balanced portfolio of projects and funding from DOE, the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Defense.
- Led the growth of the CCSD budget from ~\$10M in 2001 to ~\$350M in 2010 and recruited more than 500 new staff over 8 years.

Led the establishment of DOE's first National Leadership Computing Facility, with the mission of reasserting U.S. leadership in supercomputing following the announcement of Japan's powerful Earth Simulator system. In this capacity:

- Oversaw the construction at ORNL of the nation's largest unclassified computing facility, with 40,000 square feet of space for computer systems and data storage, and the acquisition and deployment of leadership-class supercomputers.
- Joined with Senator Lamar Alexander to secure an additional \$25M in funding for DOE Office of Advanced Scientific Computing Research.
- Created the vision, strategy, and partnerships and successfully led the proposal for establishing Leadership Computing Facilities at ORNL and Argonne National Laboratory in partnership with other laboratories and universities, incorporating the concept of an "end station" to engage the user community in a first for high-performance computing facilities.
- Worked with DOE to tailor Order 413.3b, "Program and Project Management for the Acquisition of Capital Assets," to support the acquisition and deployment of leadership-class computers.
- Led the acquisition and deployment of two world-leading supercomputers, Jaguar and Titan, on scope, schedule, and budget; developed and leveraged partnerships with Pete Ungaro, CEO of Cray, and Hector Ruiz, Chairman of the Board of AMD, to deliver Jaguar and with Pete Ungaro, and Jensen Huang, CEO of NVIDIA, to deliver Titan.
- Established collaborations with multiple agencies to develop and implement one of the world's most comprehensive high-performance computing facilities for national security applications.
- Developed collaboration with NOAA to establish the leading supercomputing capability for weather and climate prediction.
- Led the strategy and partnership across national laboratories and universities for DOE's Scientific Discovery through Advanced Computing (SciDAC) program, with ORNL PIs leading successful proposals in astrophysics, materials, fusion, and climate.
- Established an outreach program for underrepresented and minority students that trained more than 150 students in math and science; supported CCSD staff in mentoring more than 270 students and more than 130 postdoctoral fellows.

- 2000–2001 **Deputy Associate Laboratory Director for High Performance Computing**
 In a position created as part of UT-Battelle’s reorganization of ORNL, led ORNL’s strategy for the development and operation of a world-class supercomputing complex.
- 1998–2000 **Director, Computer Science and Mathematics Division**
 Developed vision and strategy, restructured and streamlined the division, attracted world-class talent, and grew programs to transform the organization.
- Negotiated with DOE’s Mathematical, Information, and Computational Sciences Program an early shutdown of the Intel Paragon, saving \$3M in operation and maintenance cost that was leveraged with \$3M from other DOE programs to secure a massively parallel system, the IBM Winter Hawk, the first terascale system in the Office of Science; incorporated into the contract with IBM a research collaboration with Wanda Andreoni at IBM Zurich on the Blue Gene system, positioning ORNL as a leader in massively parallel computing.
- 1987–1998 **Postdoctoral Researcher (1987–1988), Research Staff Member (1989–1991), and Group Leader (1992–1998), Metals and Ceramics Division**
- Developed a three-dimensional computational model that could accurately predict the magnitude and direction of liquid metal flow, which allowed for the rationalization of the effect of sulfur.
 - Co-authored two papers in *Welding Journal*, now recognized as hallmark publications, that ushered in the integrated process modeling of welding and joining; the documented methodologies have been extended by others and are now available to industry, academia and researchers across the world.
 - As principal investigator, led the Supercomputing for Automotive Applications Partnership, a multi-laboratory (Los Alamos, Lawrence Livermore, Sandia) partnership with U.S. automotive companies to develop the next generation of design tools for massively parallel supercomputers; led four major Cooperative R&D Agreements with Chrysler, Ford, and General Motors.
 - Founded and led the modeling and simulation group and mentored 7 PhD students and 10 post-doctoral fellows.

2001–present **UT-Battelle, LLC | Oak Ridge, Tennessee**

2017–present **President and Chief Executive Officer**

Leads UT-Battelle, LLC, a 50-50 limited liability partnership of the University of Tennessee and Battelle Memorial Institute, in managing and operating ORNL for DOE, ensuring simultaneous excellence in science and technology, mission support, and community service.

2007–2017 **Executive Vice President for Science and Technology**

Worked to ensure that ORNL maintained high-impact R&D programs that supported DOE mission areas; developed and executed plans for expanding ORNL's R&D capabilities; established new partnerships with major research universities; served as ORNL liaison to the UT-Battelle Science and Technology Committee.

2012–2015 **Qatar Foundation for Education, Science and Community Development | Doha, Qatar**

2012–2015 **Executive Vice President**

Responsible for advancing and promoting the Foundation's mission and research initiatives in energy and environment, information and computing technology, life sciences and biomedical research, and social sciences. In August 2016, Hamad bin Khalifa University (HBKU), a member of the Qatar Foundation, was named one of *Nature Index's* 2016 Top 25 Research Rising Stars in the Middle East and West Asia.

Served as Science Advisor to Her Highness Sheikha Moza Bint Nasser and the Qatar Foundation Board of Trustees, and accompanied Her Highness on state visits to establish notable partnerships, including the following:

- Imperial College London. Created Qatar Biobank to map health indicators of 20% of the Qatari and long-term resident population
- British Library. Established Qatar Digital Library with the aim of digitizing, annotating, and improving access to the British Library collection of Gulf records and Arab scientific manuscripts.
- Massachusetts Institute of Technology (MIT). Established a computer science research program for exchange of scientists and students.
- Japanese Preventive Medicine & Diagnosis Innovation Program at RIKEN (RIKEN-PMI). Established joint research laboratories and programs in Qatar and Japan.

Served as Executive Vice President of R&D, established vision and strategy for Qatar's investment of 2.8 percent of its gross domestic product in R&D ensuring greatest possible contribution to economic prosperity, public health, environmental quality, and national security. Highlights include:

- Established mission need and initiated construction of 2 million square feet of world-leading scientific infrastructure to support Qatar National Research Strategy.
- Recruited more than 600 eminent scientists and launched the Qatar Foundation PhD program for establishing a workforce with world-class expertise capable of achieving Qatar's National Vision objective of creating a knowledge-based, diversified economy.

2013–2015

Chairman, Qatar Science and Technology Park

Led Qatar Science and Technology Park (QSTP), the national agency charged with translating research into commercial outcomes with the explicit goal of technology incubation and technology acceleration. QSTP is home to more than 40 multi-national companies, including GE, Microsoft, Siemens, Shell, ExxonMobil, Maersk, Rolls-Royce, Total, and Qatar Petroleum.

- Established Qatar Carbonates and Carbon Storage Research Centre, a 10-year, \$70 million strategic collaboration of Imperial College London, Qatar Petroleum, Shell, and QSTP.
- Leveraged partnership with Williams Formula 1 team based at QSTP to promote road safety campaigns.
- Initiated the MIT Regional Entrepreneurship Acceleration Program, a 2-year program designed to help Qatar accelerate economic development and job creation.
- Collaborated with General Electric to implement FastWorks for harnessing Qatar’s entrepreneurial spirit, improving the work process, and delivering faster with better outcomes.

2013–2015

Chairman, Qatar Foundation Science and Technology s.p.c.

Oversaw global investments in applied science and technology, research and development, product development, and technical training and consulting

- Established the Qatar Material Science Center, a joint venture by Volkswagen AG, Porsche AG, Qatar Holding Sovereign Fund, and QSTP.
- Acquired Virgin Health Bank from Virgin Group for the banking of cord blood stem cells to treat conditions such as heart disease and diabetes, a key component of Qatar’s life sciences research strategy.

Academic Experience

2005–Present **The University of Tennessee | Knoxville, TN 37916**

2005–present **Professor, Electrical Engineering and Computer Science**
Professor, Bredesen Center for Interdisciplinary Research and Graduate Education

Supported by UT-Battelle, a partnership of UT and Battelle Memorial Institute, to contribute to UT and the State of Tennessee; highlights include:

- Negotiated strategic partnerships with multiple universities to successfully compete for a \$65M NSF Track 2 award, the single largest NSF award to UT and the State of Tennessee at that time; with subsequent awards, NSF has awarded close to \$100M in grants to UT.
- Led efforts to connect major Tennessee research and educational institutions through high-speed networks; a centerpiece of the activity was a focused collaboration in health sciences among ORNL, Vanderbilt University, St.

Jude Children's Research Hospital, and UT Health Science Center. This activity led to the launch of Memphis Bioworks, a non-profit organization created to foster economic growth in the bioscience community.

- Partnered to relocate the SimCenter, a UT Center of Excellence in Applied Computational Science and Engineering, to UT Chattanooga for enhanced research in modeling and simulation.
- Partnered with Bob Corker, then Mayor of Chattanooga, and the Chattanooga Electric Power Board to create Metronet, which has grown to establish Chattanooga as one of the most connected cities in the United States and serves as an incubation platform to attract IT-based companies.
- Granted tenure by UT Board of Trustees in 2006 in the Electrical and Computer Science Department.

2007–2009

Vice President for Science and Technology

Appointed to strengthen relations between ORNL and UT with focus on the UT Research Foundation, UT Space Institute, UT Center for Health Sciences Center, and Cherokee Farm Innovation Campus. Served on founding advisory committee for Cherokee Farm Innovation Campus, setting the vision and guidelines that enabled development of the Joint Institute for Advanced Materials. Served as inaugural board member of Genera Energy, LLC, helping connect ORNL's BioEnergy Science Center and UT Biofuels Initiative to accelerate development and growth of a cellulosic biofuels industry in Tennessee.

1995–1996

Indian Institute of Technology | Chennai, India

Visiting Professor

With the encouragement of Dr. Iran Thomas, then acting Associate Director for DOE Basic Energy Sciences, and Dr. Linda Horton at ORNL, served as a visiting professor while concurrently leading a research group at ORNL. Developed and taught a course in computational materials science and advised graduate students. Helped to establish the American International School Chennai (AISC), designed to provide instruction, activities, and facilities for families on expatriate assignments in Chennai, and served as a founding member of the AISC board; established through a bilateral agreement between the governments of the United States of America and India, the school and its program have served as a demonstration center for U.S. educational methods and practices.

Professional and Policy Committees

Current activities

- Member of the Board, Barcelona Supercomputing Center and advisor to the General Director of Research of the Generalitat de Catalunya., 2012–present
- Chair, Georgia Tech external review panel for high-performance computing initiatives, 2015–present
- Officer, Industrial Science and Technology (Section P), AAAS, 2016–present
- Member, Steering Committee, Council on Competitiveness Energy & Manufacturing Competitiveness Partnership, 2017–present
- Director, Board of American Associates of the STS Forum, 2017–present

Previous activities

- Member, National Laboratories Chief Research Officers Working Group, 2015–2017
- Member, Battelle Chief Research Officers Council, 2015–2017 (chair, 2010–2012)
- Member, University of Tennessee Office of Research and Engagement External Advisory Council, 2015–2017
- Global Federation of Competitiveness Councils, Board of Directors, 2013–2015
- Materials Science Center Board of Directors, 2013–2015
- Virgin Health Bank Board of Directors, 2013–2015
- Genera Energy Board of Directors, 2010–2012
- Engineering and Physical Sciences Research Council Advisory Board, 2010–2012
- Council on Competitiveness Advisory Board, 2009–2012
- DOE Sector Chief Research Officers Council, 2009–2012
- Ohio Supercomputer Center Governing Board, 2010–2012
- Brookhaven Science Associates Science and Technology Steering Committee, 2009–2012
- High-Performance Computing Task Force, National Science Foundation Advisory Committee on Cyber Infrastructure, 2009
- NOAA Science Advisory Board, 2008–2010
- DOE Advanced Scientific Computing Advisory Committee, 2007–2009
- Board of Directors, Scientific and Technical Council of Jülich Research Center, 2007
- Interim Assessment Committee on Scientific Computing, Scientific and Technical Council of Jülich Research Center, 2007
- HPC Advisory Board, Pellissippi State Technical Community College, 2003–2005
- Center for Experimental Research in Computer Systems Advisory Board, Georgia Institute of Technology, 2003–2007
- IBM BlueGene Advisory Board, 2001–2003
- System of Laboratories Computing Coordinating Committee (SLCC), 2000–2005
- Steering Committee, Energy Sciences Network Research Committee, 2000–2003

- School of Computational Science and Information Technology Review Board, Florida State University, 1999–2002
- Executive Board, Joint Institute for Computational Sciences, 1998–2005
- Engineering School Advisory Board, University of Mississippi, 1998–2003
- American International School Board, Madras, India, 1993–1995
- Steering Committee, Supercomputing for Automotive Applications Partnership (partnership of DOE labs and GM, Ford, and Chrysler)
- ASM/TMS Computer Simulation Committee
- AWS Technical Papers Committee
- AWS Awards Committee
- National Transportation Safety Board TWA 800 Review Panel

Policy activities

- Member, NOAA Science Advisory Board, the only Federal Advisory Committee with responsibility to advise the Under Secretary of Commerce for Oceans and Atmosphere on long- and short-range strategies for research (2008–2010); part of the working group that developed the data archiving and access requirements for NOAA weather service
- Member, Advisory Committee for Cyberinfrastructure (ACCI), National Science Foundation (2009)
- Chair, ACCI High Performance Computing Task Force, National Science Foundation (2009); led production of the March 2011 report that formed the basis for NSF’s HPC strategy for advancing science and engineering
- Co-chair, with Rick Stevens (Argonne) and Horst Simon (Berkeley), of a series of three town hall meetings, summarized in the DOE report Modeling and Simulation at the Exascale for Energy and the Environment, that resulted in national discussion and development of DOE’s exascale initiative

Community Organizations

- Member, Leadership Knoxville
- Board Member, Launch Tennessee (economic development arm of the State of Tennessee)
- Steering Committee Member, Connect Knox
- Member, East Tennessee Economic Council
- Member, Oak Ridge Rotary

Selected Conference Leadership Roles

- Chairman, Scientific Discovery through Advanced Computing (SciDAC) Program Conference, 2010
- Chairman, Future of High Performance Computing Task Force Workshop, Washington, DC, 2009

- Member, Scientific Committee, 2008 Young Investigators Symposium, Oak Ridge, TN, 2008
 - Member, Program Committee, MasterWorks, SC08, Austin, TX, 2008
 - Organizing Committee, Scientific Impacts and Opportunities for Computing, Maui, HI, 2008
 - Organizing Committee, Modeling and Simulation at the Exascale for Energy and the Environment, town hall meetings, Lawrence Berkeley, Oak Ridge, and Argonne National Laboratories, 2007
 - Member, Program Committee, Workshop: Scaling to New Heights, Pittsburgh, PA, 2002
 - Member, Program Committee, International Conference on High Performance Computing (HIPC), India, 2001
 - Member, Organizing Committee, International Conference on Intelligent Processing and Manufacturing of Materials (IPMM01), Vancouver, 2001
 - Member, Program Committee, High Performance Distributed Computing (HPDC), California, 2001
 - Member, Program Committee, Supercomputing in Nuclear Applications (SNA2000), Tokyo, Japan, September 2000
 - Member, Organizing Committee and North American Chair, International Conference on Intelligent Processing and Manufacturing of Materials (IPMM99), Honolulu, HI, July 10-15, 1999
 - Chairman, Modeling and Control of Joining Processes, Orlando, FL, December 8-10, 1993
 - Co-Chair, DOE/BES Workshop on Modeling for Welding Science, Cocoa Beach, FL, March 3-6, 1993
 - Co-Chair, Joint ASM/TMS Symposium on Process Modeling, Los Angeles, 1999
 - Member, Organizing Committee, 3rd ASME-JSME Joint Thermal Engineering Conference, Nevada, March 17-22, 1991.
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Awards and Recognition

- Elected Fellow, American Association of the Advancement of Science, 2015
 - Elected Corresponding Member, International Academy of Astronautics, 2014
 - *HPCWire* People to Watch, 2014
 - Distinguished NITian of the Year Award, 2013
 - University of Mississippi, Engineer of the Year Award, 2011
 - Elected Fellow, American Welding Society, 2005
 - ORNL Workforce Diversity Award, 2001
 - ORNL Leader of the Year Award, 2000
 - ORNL Leadership Award, 2000
 - F. Davis Silver Medal Award, American Welding Society, 1999
 - Technical Communication Award of Merit, Society for Technical Communication, 1999
 - Lockheed Martin Energy Research President's Award, 1999
 - Distinguished Lecture Award, Nanchang University, China, 1996
 - Martin Marietta Energy Systems Technical Achievement Award, 1995
 - William Spraragen Award, American Welding Society, 1995
 - Champion H. Mathewson Award (coauthor citation), The Minerals, Metals, and Materials Society, 1994
 - Advanced Technology Award, 1993
 - William Spraragen Award, American Welding Society, 1989
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R&D Sponsors and major grants

(~\$500M as principal investigator and project leader)

- U.S. Department of Energy, Office of Science: Office of Basic Energy Sciences (1987–2001); Office of Biological and Environmental Research (1998–2005); Office of Advanced Scientific Computing Research (1998–2008)
 - U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (1993–2001)
 - National Nuclear Security Administration, Defense Program Technology Transfer CRADAs (1993–1997)
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Top 10 publications

h-index: 32; i10-index: 49; total citations: 3229 [source: Google Scholar, March 15, 2017]

1. T. Zacharia, S.A. David, J.M. Vitek, T. DebRoy, "Weld Pool Development during GTA and Laser Beam Welding of Type 304 Stainless Steel, Part II: Experimental Correlation," *Weld. J.* 68 (12), 510s–519s (1989)
2. B. Taljat, T. Zacharia, F. Kosel, "New analytical procedure to determine stress-strain curve from spherical indentation data," *Int. J. Solids Structures* 35 (33), 4411–4426 (1998)
3. B. Radhakrishnan, T. Zacharia, "Simulation of curvature-driven grain growth by using a modified Monte Carlo algorithm," *Metall. Mater. Trans. A* 26 (1), 167–180 (1995)

4. B. Radhakrishnan, G.B. Sarma, T. Zacharia, "Modeling the kinetics and microstructural evolution during static recrystallization—Monte Carlo simulation of recrystallization," *Acta Mater.* 46 (12),4415–4433 (1998)
5. B. Taljat, B. Radhakrishnan, T. Zacharia, "Numerical analysis of GTA welding process with emphasis on post-solidification phase transformation effects on residual stresses," *Mater. Sci. Eng. A* 246 (1), 45–54 (1998)
6. J.C. Charlier, M. Terrones, M. Baxendale, V. Meunier, T. Zacharia, N.L. Rupesinghe, W.K. Hsu, N. Grobert, H. Terrones, and G.A.J. Amaratunga, "Enhanced electron field emission in B-doped carbon nanotubes," *Nano Lett.* 2 (11), 1191–1195 (2002)
7. T. Zacharia, A.H. Eraslan, D.K. Aidun, "Modeling of non-autogenous welding," *Weld. J.* 67 (1), 18s (1988)
8. T. Zacharia, S.A. David, J.M. Vitek, "Effect of evaporation and temperature-dependent material properties on weld pool development," *Metall. Trans. B* 22 (2), 233–241 (1991)
9. T. Zacharia, A.H. Eraslan, D.K. Aidun, S.A. David, "Three-dimensional transient model for arc welding process," *Metall. Trans. B* 20 (5), 645–659 (1989) [times cited: 100]
10. T. Zacharia, A.H. Eraslan, D.K. Aidun, "Modeling of autogenous welding," *Weld. J.* 67 (3), 53s–62s (1988)

Patents

2 U.S. patents: "Method and apparatus for solving complex and computationally intensive inverse problems in real-time" (6,208,982); "Neural network control of spot welding" (6,018,729)

Selected presentations

1. *Facing the Challenges—International Experience and Qatar's Opportunities*, Annual Research Conference'13, Qatar National Convention Center, Doha, Qatar, November 24, 2013
2. *Building a World-Class National Enterprise in Science and Innovation*, Director's Distinguished Lecture, Lawrence Livermore National Laboratory, Livermore, CA, August 12, 2013
3. International Supercomputing Conference, Data Science, ISC Think Tank Series, Leipzig, Germany, June 16–20, 2013
4. *Building a World Leading Research and Innovation Enterprise*, Keynote, Discover Ankabut UAE Advanced Network for Research and Education, Abu Dhabi, United Arab Emirates, February 21, 2013
5. *Engineering a Sustainable Future: The Role of Science and Technology*, Clarkson University, Potsdam, NY, October 22, 2010
6. *Advanced Computing for a Clean Energy Future*, John R. and Donna S. Hall Lecture, Vanderbilt University School of Engineering Nashville, TN, January 14, 2010
7. *Computational Materials Science and Engineering: Accelerating Discovery*, 2009 ASM/TMS Distinguished Lecture in Materials and Society, Materials Science and Technology Conference and Exhibition, Pittsburgh, PA, October 26, 2009

8. *Scientific Impacts and Opportunities in High Performance Computing*, 2008 Young Investigators Symposium, Oak Ridge, TN, October 13-15, 2008
 9. *Impacts and Opportunities for Leadership Computing*, Invited lecture, Isaac Newton Institute, Cambridge, United Kingdom, September 26, 2008
 10. *What Changes will be Needed in Existing High Performance Computing Centers, Simulating the Future: Using One Million Cores and Beyond*, Chateau de Tremblay, France, September 22, 2008
 11. *Impacts and Opportunities for Leadership Computing*, National Academy of Engineering Summit on Computational Engineering, Washington, DC, September 17, 2008
 12. *Going Green: Data Center Transformation for Leadership in Computing*, 20th Annual ICT for Sustainable Economic, Business, and Social Development Conference, United Nations Headquarters, New York, July 11, 2008
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Education

Ph.D. (engineering science), Clarkson University, Potsdam, New York

M.S. (materials science), University of Mississippi, Oxford, Mississippi

B.S. (mechanical engineering), National Institute of Technology, Karnataka, India
