BIOGRAPHICAL SKETCH – RUYAN GUO, *Ph.D.*

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(a) Education and Training

Xian Jiaotong University	Xi'an, China	Electrical Engineering	BS, 1982
Xian Jiaotong University	Xi'an, China	Electrical Engineering	MS, 1984
Penn State University	University Park, PA	Solid State Science	PhD, 1990

(b) Research and Professional Experience

08/2007-present Robert E. Clarke, Jr. Endowed Distinguished Professor in Electrical Engineering, UTSA
05/2012-present Director of Interdisciplinary Graduate Prog. in Adv. Materials Engineering; UTSA
03/2019-09/2022 Program Director, Electrical, Communications and Cyber System Division, Engineering Directorate, National Science Foundation
09/2016-08/2017 Interim and founding Director, Chemical Engineering Program, UTSA
01/2010-08/2012 Department Chair (interim), Electrical and Computer Engineering, UTSA
07/2004-08/2008 Prof of Electrical Engineering, Penn State University. (Adj. Prof. 2009-2014)
07/1999-06/2004 Associate Professor of Electrical Engineering, Penn State University
07/1996-06/1999 Senior Res Assoc. & Assoc. Prof. (affiliated) Electrical Engrg., Penn State
07/1995-06/1996 Faculty Res Associate and Assist Professor of Materials, Penn State Univ.
01/1999-06/1994 Faculty Research Associate, Materials Research Lab, Penn State Univ.
10/1984-09/1985 Assoc. Lecturer, Dept. of Electrical Engineering, Xi'an Jiaotong Univ.

(c) Honors and Awards

- 2023 **John Jeppson Award**, The American Ceramic Society – in recognition of "distinguished scientific, technical, or engineering achievements in ceramics."
- 2023 Outstanding Graduate Mentor Award, Graduate School, The University of Texas at San Antonio
- 2020 **ACerS Global Ambassador Award** – "for her outstanding contribution in advancing the electronic ceramics research with global impact, through interdisciplinary education, research collaboration, and professional leadership."
- 2019 **Academician, World Academy of Ceramics**, Class Science – for "outstanding contribution in scientific understanding of polarization mechanisms of piezoelectric ceramics and interdisciplinary engineering research of multiferroic composite materials"
- 2019 Annual Innovation Award – Licensing Revenue, University of Texas at San Antonio
- 2018 Certificate of Officially Amazing as **Guinness World Record** holder for "Smallest Medical Robot" (shared with S. Betal and A.S. Bhalla)
- 2018 Eminent Engineer, elected honorary TBP membership, Tau Beta Pi - Engineering Honor Society
- 2018 The Amber - honored by UTSA Ambassador for outstanding contribution and service to the students at The University of Texas at San Antonio
- 2018 Albert Nelson Marquis Lifetime Achievement Award, The Marquis Who's Who

Publications Board

- 2017 Annual Innovation Award - Licensing Revenue, The University of Texas at San Antonio
- 2017 Annual Research Expenditure Exceeding $250K Award, College of Engineering, The University of Texas at San Antonio
- 2017 Highest Funding as Principal Investigator Award, College of Engineering, The University of Texas at San Antonio
- 2016 Annual Innovation Award - Licensing Revenue, The University of Texas at San Antonio
- 2015 Recognition Award for serving Advisory Board for American Chemical Society Petroleum Research Fund, American Chemical Society
- 2013 College of Engineering Faculty Award for Excellence in Research, The University of Texas at San Antonio
- 2013 **IEEE Fellow** Award for contributions "to the understanding of polarization phenomena in ferroelectric solid-solution systems," Institute of Electrical and Electronics Engineers
- 2011 Featured professional in the 2011 SPIE Women in Optics Monthly Planner, International Society for Optical Engineers (SPIE)
- 2009 **SPIE Fellow** Award for contribution in Advanced Optical Materials, International Society for Optical Engineers (SPIE)
- 2007 Academic Advisory Board Member, Electronic Materials Research Lab, Xi'an Jiaotong University, China
- 2007 Robert E. Clarke Endowed Distinguished Professorship, The University of Texas at San Antonio
- 2006 Honorary Guest Professor, Beijing University of Technology, Beijing, China
- 2006 Honorary Guest Professor, Shanghai University, Shanghai, China
- 2006 Honorary Guest Professor, Wuhan University of Technology, Wuhan, China
- 2006 Distinguished Guest and Speaker, Jiaotong University's 110th Anniversary, Xian, China
- 2003 **ACerS Fellow** Award, American Ceramic Society (ACerS)
- 2001 Certificate of Excellence in Service, American Ceramic Society
- 2001 Strathmore's WHO'S WHO
- 1994 Certificate of Recognition for Organizing the Ninth IEEE International Symposium on Application of Ferroelectrics, Institute of Electrical and Electronics Engineers (IEEE)
- 1991 XEROX Award for the Best PhD Research in Materials, The Pennsylvania State University

(d) Area of Research Interests

Interdisciplinary research in electrical engineering and materials science & engineering of electronic and optoelectronic materials and devices with focus on ferroelectric, piezoelectric and pyroelectric ceramics and single crystals, microwave dielectric devices, multifunctional and nanocomposites, hybrid 3D fabrication for sensors, actuators, modulators, and energy converter applications.

(e) Publications

Selected 10 publications *from* over 500 scholarly publications (378 referred journal articles, 35 Edited Books, 144 conference papers, 6 patents, and 6 other scholarly works) with citations >14,750, H-index 49, source *Google Scholar Citations* (ORCID *http://orcid.org/0000-0002-7661-6042)*

[1] R. Guo, L.E. Cross, S.E. Park, B. Noheda, D.E. Cox, and G. Shirane, "Origin of the High Piezoelectric Response in PhZr1-xTixO3," *Physical Review Letters,* 84(23) 5423-5426, 2000

[2] A. S. Bhalla, R. Guo, and R. Roy, "The perovskite structure - a review of its role in ceramic science and technology," *Materials Research Innovations,* 4(1), 3-26, 2000/11/ 2000

[3] R. Guo, A. S. Bhalla, C. A. Randall, Z. P. Chang, and L. E. Cross, "Polarization mechanisms of morphotropic phase boundary lead barium niobate (PBN) compositions," *Journal of Applied Physics,* 67 (3), 1453-60, 1990.

[4] C. Y. Huang, A. S. Bhalla, and R. Y. Guo, "Measurement of microwave electro-optic coefficient in Sr0.61Ba0.39Nb2O6 crystal fiber," *Applied Physics Letters*. 86(21) 2005

[5] T. Maiti, R. Guo, and A. S. Bhalla, "Structure-property phase diagram of BaZrxTi1-xO3 system," *Journal of the American Ceramic Society,* vol. 91, no. 6, pp. 1769-1780, Jun 2008

[6] R. Y. Guo, J. F. Wang, J. M. Povoa, and A. S. Bhalla, "Electrooptic properties and their temperature dependence in single crystals of lead barium niobate and strontium barium niobate," *Materials Letters,* vol. 42, no. 1-2, pp. 130-135, Jan 2000

[7] R. Guo, A. S. Bhalla, L. E. Cross, and R. Roy, "Surface crystallographic structure compatibility between substrates and high T_c (YBCO) thin films," *Journal of Materials Research,* vol. 9, no. 7, pp. 1644-56, 1994/07/ 1994

[8] M. Dutta, K. Natarajan, S. Betal, R. P. Prasankumar, A. S. Bhalla, and R. Guo, "Magnetoelastoelectric coupling in core–shell nanoparticles enabling directional and mode-selective magnetic control of THz beam propagation," *Nanoscale,* 10.1039/C7NR03504G vol. 9, no. 35, pp. 13052-13059, 2017

[10] Betal, S, AK Saha, E Ortega, M Dutta, A Ramasubramanian, AS Bhalla, and Ruyan Guo, "Core-shell magnetoelectric nanorobot–A remotely controlled probe for targeted cell manipulation," *Scientific reports,* vol. 8, no. 1, p. 1755, 2018

[10] S. Betal, A. S. Bhalla, and R. Guo, "High-speed propulsion of magnetoelectric nanovehicle actuated by bio-cellular electric field sensing," *Sensing &Bio-Sensing Res.* 38, 100521, 2022.

(f) Synergistic Activities

1. Professional Leaderships:

- **Conference Chair/Co-Chair**, Conf on Photonic Fiber and Crystal Devices: (2007-present, annually); SPIE Optics + Photonics
- **Conference Chair/Co-Chair**, MS&T Conferences and ACerS Annual Meeting, Expo, and Tech Fair, Intn'l Symp. on Dielectric Mater. & Electronic Devices, Materials Sci & Tech (2004-present);
- **Local Chair,** 2017 International Meetings on Ferroelectrics (IMF2017), San Antonio, TX;
- **Coordinator**: IEEE International Symposium, Application of Ferroelectrics 1994, Univ Park, PA
- **International Advisory** IEEE/Intern'l Symp Appl of Ferroelec; 2008, Santa Fe, NM;
- **Co-Chair**: The 18th International Symposium, Application of Ferroelectrics 9th IMF Topic M: Pyroelectric Materials and Devices, 2009, Xian, China

- American Chemical Society, Petroleum Research Fund **Advisory Board Member** (2009-2015);
- **Editorial Board/International Editorial Board member** – current: international J. *Ferroelectrics*, *Ferroelectrics Letters, Electronic Components and Materials*

2. **Research Management and Government Services**

National Science Foundation - Program Director, Division of Electronics, Communications, and Cyber Systems (ECCS), Directorate for Engineering (March 2019 – Sept. 2022)

- Served as the Cluster-Lead for ECCS' Electronics, Photonics and Magnetic Devices (EPMD) Cluster Programs.
- Led the Directorate for Engineering's effort in establishing an international collaborative Advanced Chip Engineering Design and Fabrication (ACED Fab) program.
- Led the divisional effort in launching and managing the Addressing Systems Challenges through Engineering Teams (ASCENT) program.
- Served as Managing Program Director for Future of Semiconductors (FuSe), Designing Materials to Revolutionize and Engineer our Future (DMREF), Future of Work at the Human-Technology Frontier: Core Research (FW-HTF) Programs.
- Contributed to a wide range of NSF initiatives and programs including Semiconductor Working Group; Quantum Leap Working Group; Future of Work at Human-Technology Frontier Working Group, COVID Recovery Task Force, Engineering Research Center Site Visits, Emerging Frontiers in Research and Innovation Team, HBCU-Excellent in Research Management Team, etc.)

3. **Education, Mentorship, and Outreach**

Dr. Guo has advised and graduated 23 PhD and 78 master's (36 Thesis) degree students in interdisciplinary Electrical Engineering and Materials Science and Engineering.

- **Principal Investigator**: Department of Navy STEM program (2013-2017) at UTSA;
- **Co-PI/SrP**: NSF Scholarship program for Undergrad Retention & Success (SPURS) at UTSA (2015-2021);
- **Faculty Advisor**: Society of Woman Engineers (**SWE**) at UTSA (2008-2020);
- **Faculty Advisor**:IEEE-UFFC UTSA (est. 2016 – present);
- **Faculty Advisor**:SPIE Student Chapter, UTSA (est., 2016 - present)
- **Faculty Mentor**: LSAMP-BD (since 2009)
- **Chair, Advisory Committee**, Advanced Materials Technology Workforce Technical Program, Northwest Vista College, San Antonio (2015-2022)
- **Director** (2003-2008) of **NSF REU Site Program (Penn State)** in Electrical Engineering