

# Long-Qing Chen

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## EDUCATION AND TRAINING

- Massachusetts Institute of Technology, Materials Science and Engineering, Ph.D., 1990
  - Stony Brook University, Materials Science and Engineering, M.S., 1985
  - Zhejiang University, Materials Science and Engineering, B.S., 1982
  - Rutgers University, Materials Science and Engineering, Postdoc, 1990-1992
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## RESEARCH AND PROFESSIONAL EXPERIENCE

- 2015->Present, Donald W. Hamer Professor of Materials Science and Engineering, Engineering Science and Mechanics, and Mathematics, Penn State
  - 2012->2015, Distinguished Professor of Materials Science and Engineering, Penn State
  - 2002->2012, Professor of Materials Science and Engineering, Penn State
  - 2000->2012, Associate Head for Graduate Studies in Materials Science and Engineering, Penn State
  - 1998->2002, Associate Professor of Materials Science and Engineering, Penn State
  - 1992->1998, Assistant Professor of Materials Science and Engineering, Penn State
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## RESEARCH INTERESTS

- Development of mesoscale computational models integrating phase-field method with microelasticity, micromagnetics, electrostatics, and chemical/thermal transport and their applications to:
  - Domain structures and electrical/mechanical/magnetic couplings in nanoferroelectrics/piezoelectrics, magnetics, and multiferroics and their thin films and heterostructures including magnetoelectric device modeling
  - Microstructure evolution during alloy phase transformations including order-disorder, phase separation, and martensitic transformations during heat treatment or additive manufacturing
  - Grain growth in single-phase and multi-phase thin films and bulk systems
  - Precipitate morphologies and Ostwald ripening
  - Interactions between defect and phase microstructures
  - Electrochemical transport and microstructure evolution in solid state oxide fuel cell and battery electrodes and ionic transport in solid electrolytes
  - Dielectric capacitor degradation and breakdown
  - Growth kinetics and morphology of 2D materials
- Analytical thermodynamic and kinetic theories of phase transitions, interfaces, and microstructures
- Density function theory and lattice dynamics calculations of finite-temperature structural and interfacial thermodynamic and kinetic properties
- Multiscale modeling integrating atomistic/first principles calculations with phase-field method or kinetic Monte Carlo method

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## RESEARCH ACCOMPLISHMENTS

- > 500 total publications (3 Nature, 6 Science, 2 Nature Materials, 1 Nature Nanotechnology, 1 Nature Physics, 2 Annual Review of Materials Research, 10 Nature Communications, 2 Proceedings of National Academy of Sciences, 1 Science Advances, 10 Advanced Materials, 14 Nano Letters, 4 ACS Nano, 14 Physical Review Letters, 6 Advanced Functional Materials, 72 Acta Materialia)
- Citations: Total > 26,000, H-index = 81
- Co-edited 3 books with one book "Continuum Scale Simulation of Engineering Materials" which was on the top-10 bestseller list in Materials Science in 2005 according to the publisher, Wiley VCH
- > 300 invited (~25 keynote and plenary) presentations including 6 at Gordon Research Conferences
- 2 patents with one licensed by Intel

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## PROFESSIONAL ACTIVITIES

- Editor-in-Chief for npj Computational Materials by the Nature Publishing Group; Editor for Materials Research Letters by Taylor & Francis; Associate Editor for the Journal of the American Ceramic Society; and Overseas Editor for Materials Transactions, JIM (Japanese Institute of Metals); Editorial Board Member of Applied Physics Letters and Journal of Applied Physics, Computational Materials Science, the International Journal of Nano & Biomaterials, Communications in Computational Physics
- Organized or co-organized more than 40 MRS, TMS, and MS&T conference symposia including Chairing or Co-Chairing the International Seminar on Phase-field Method 2009 and 2014
- Serving on the MRS Award Subcommittee for Graduate Student Awards; Served or currently serving more than half-dozen TMS committees including Information Technology, EMPMD Division Council, Programming, Chemistry and Physics of Materials, Phase Transformation, Computational Materials Science and Engineering, ICME, and ad hoc Technical Advisory Group on ICME

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## SELECTED LIST OF HONORS AND AWARDS

- Fellow of the Minerals, Metals, and Materials Society (TMS, 2017, only 100 living TMS Fellows world-wide), Fellow of the American Ceramic Society (ACerS, 2015), Fellow of Materials Research Society (MRS, 2013), Fellow of ASM International (ASM, 2012), Fellow of the American Physical Society (APS, 2008)
- Lee Hsun Award by Shenyang Institute of Metals Research, Chinese Academy of Sciences, 2015
- National Science Foundation Special Research Creativity Award 1998 and 2015
- MRS Materials Theory Award, 2014
- TMS EMPMD Distinguished Scientist Award 2011
- Students' Choice Faculty of the Year Award, Materials Science and Engineering, Penn State, 2010
- Royal Society / Kang Tong Po Visiting Professorship at Hong Kong Polytechnic University, 2006
- ASM Materials Science Research Silver Medal 2006
- Guggenheim Fellow, 2005 – 2006
- Penn State Faculty Scholar Medal in Engineering, 2003
- Earth and Mineral Science College Wilson Award for Outstanding Research, 2000
- Office of Naval Research Young Investigator Award, 1995