JAYAKANTH RAVICHANDRAN

Philip and Cayley MacDonald Endowed Early Career Chair
Associate Professor of Chemical Engineering and Materials Science and Electrical and Computer Engineering

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EDUCATION

University of California, Berkeley (2007-11)

- *Ph.D.* in Applied Science and Technology
- Major: Quantum Physics, Minor: Heat Transfer
- *Dissertation:* Thermal and electrical transport in oxide heterostructures
- *Advisors:* Prof. R. Ramesh (UC Berkeley) & Prof. Arun Majumdar (Stanford)

Indian Institute of Technology, Kharagpur, India (2002-07)

- *B.Tech.* (Hons.) and *M.Tech.* in Metallurgical and Materials Engineering
- Minor in Physics.

PROFESSIONAL EXPERIENCE

University of Southern California, Los Angeles CA
Associate Professor of Chemical Engineering and Materials Science and Electrical and Computer Engineering (03/'22 – present)

Philip and Cayley MacDonald Endowed Early Career Chair (01/'22 – present)

Co-Director, Core Center of Excellence in NanoImaging (CNI) (07/'22 – present)

Assistant Professor of Chemical Engineering and Materials Science (01/'15 – 03/'22)
Assistant Professor of Electrical and Computer Engineering (courtesy) (08/'18 – 03/'22)

HydraElectric, Burbank CA – *Consultant* (04/'18 – 04/'20)

Harvard University, Cambridge MA
Post-doctoral Fellow of Physics, (06/'14 – 12/'14)

- Mentor: Prof. Philip Kim (Physics)

Columbia University, New York NY
Post-doctoral Fellow of Physics, (01/'12 – 05/'14)

- Mentor: Prof. Philip Kim (Physics)

University of California, Berkeley CA
Research Assistant - Applied Science and Technology (07/'07 – 12/'11)

- Advisors*:* Prof. R Ramesh (Materials Science/Physics) and
  Prof. Arun Majumdar (Mechanical Engineering, Now at Stanford University)

HONORS AND AWARDS

• Philip and Cayley MacDonald Endowed Early Career Chair from USC Viterbi School of Engineering (2022-27)

- Principal Investigator of an Army Research Office Multidisciplinary University Research Initiative (ARO-MURI) Program (2021-23)
- Orange County Engineering Council Outstanding Engineering Merit Award (2020)
- TMS FMD Young Leaders Professional Development Award (2020)
- USC Provost New Strategic Directions for Research Award (2020)
- Early Career Scholar in Materials Science – Journal of Materials Research (2017)
- Link Foundation Energy Fellowship (2010-2012)
- Anselmo J. Macchi Fellowship (2008)
- Institute Silver Medal (IIT) (2007)
- InfoUSA Fellowship (2006)
- J C Ghosh Memorial Prize (2005)
- P K Chakraborthy Award (2005)
- Smt Ava Sanyal Memorial Prize (2005)

PEER REVIEWED JOURNAL PUBLICATIONS

(Web of science/Publons: ResearcherID: H-6329-2011; Google Scholar)

Note: My name is highlighted in bold, and my students' names have * after them, corresponding authors are underlined. Hyperlinks provided where available.

Preprints:

1. B. Zhao*, H. Chen*, R. Ashan, F. Hou, E. R. Hoglund, S. Singh*, M. Shanmugasundaram, H. Zhao, H. Htoon, A. Hrayev, P. E. Hopkins, J. Seidel, R. Kapadia, and **J. Ravichandran**, "Photoconductive Effects in Single Crystals of $BaZrS_3$", *under revision*.
2. B. Zhao*, G. Ren, H. Mei, V. C. Wu, S. Singh*, G. -Y. Jung, H. Chen*, R. Giovine, S. Niu*, A. S. Thind, J. Salman, N. S. Settineri, B. C. Chakoumakos, M. E. Manley, R. P. Hermann, A. R. Lupini, M. Chi, J. A. Hachtel, A. Simonov, S. J. Teat, R. J. Clement, M. A. Kats, **J. Ravichandran**, and R. Mishra, "Giant Modulation of Refractive Index from Correlated Atomic-Scale Disorder", *under revision*.
3. M. Surendran*, S. Singh*, H. Chen*, C. Wu*, A. Avishai, Y-T. Shao, and **J. Ravichandran**, "A hybrid pulsed laser deposition approach to grow thin films of chalcogenides", *under revision*.
4. N. Humphrey, A. Tsung, S. Singh*, A. Irshad, B. Zhao*, S. Narayan, **J. Ravichandran**, and S. M. Sharada, "The Hydrogen Evolution Activity of $BaZrS_3$, $BaTiS_3$, and $BaVS_3$ Chalcogenide Perovskites", *under review*.
5. M. S. B. Hoque, E. R. Hoglund, B. Zhao*, D.-L. Bao, H. Zhou, S. Thakur, E. Osei-Agyemang, K. Hattar, E. A. Scott, M. Surendran*, J. A. Tomko, J. T. Gaskins, K. Aryana, S. Makarem, G. Balasubramanian, A. Giri, T. Feng, J. A. Hachtel, **J. Ravichandran**, S. T. Pantelides, and P. E. Hopkins, "Ruddlesden-Popper chalcogenides push the limit of mechanical stiffness and glass-like thermal conductivity in crystals", *submitted*.

Journal Publications:

At USC:

6. H. Chen*, N. Wang, H. Liu, H. Wang, **J. Ravichandran**, "Charge-density-wave resistive switching and voltage oscillations in ternary chalcogenide $BaTiS_3$", *Advanced Electronic Materials*, 202300461 (2023).
7. H. Mei, G. Ren, B. Zhao*, J. Salman, G. Y. Jung, H. Chen*, S. Singh*, A. S. Thind, J. Cavin, J. A. Hachtel, M. Chi, S. Niu*, G. Joe, C. Wan, N. Settineri, S. J. Teat, B. C. Chakoumakos, **J.**

Ravichandran, R. Mishra, M. A. Kats, "Colossal Optical Anisotropy from Atomic-scale Modulations", *Advanced Materials*, 2303588 (2023).

8. H. Chen*, B. Zhao*, J. Mutch, G. Y. Jung, G. Ren, S. Shabani, E. Seewald, S. Niu*, J. Wu, N. Wang, M. Surendran*, S. Singh*, J. Luo, S. Ohtomo, G. Goh, B. C. Chakoumakos, S. J. Teat, B. Melot, H. Wang, A. N. Pasupathy, R. Mishra, J. -H. Chu, **J. Ravichandran**, "Charge-Density-Wave Order And Electronic Phase Transitions in a Dilute *d*-Band Semiconductor", *Advanced Materials*, 2303283 (2023).

9. H. Chen*, A. Avishai, and **J. Ravichandran**, "A Polymeric Planarization Strategy for Versatile Multi-terminal Electrical Transport Studies on Small, Bulk Quantum Materials", *ACS Applied Electronic Materials*, **4**, 5550 (2022).

10. M. Surendran*, B. Zhao*, G. Ren, S. Singh*, A. Avishai, H. Chen*, J-K. Han, M. Kawasaki, R. Mishra and **J. Ravichandran**, "Quasi-epitaxial growth of $BaTiS_3$ films", *Journal of Materials Research*, **37**, 3481–3490 (2022).

11. N. Tasneem, H. Kashyap, K. Chae, C. Park, P. Lee, S. Lombardo, N. Afroze, M. Tian, H. Kumarasubramanian*, H. Chen, W. Chern, S. Yu, P. Bandaru, **J. Ravichandran**, K. Cho, J. Kacher, A. Kummel, and A. Khan, "Remote Oxygen Scavenging of the Interfacial Oxide Layer in Ferroelectric Hafnium-Zirconium Oxide-based Metal-Oxide-Semiconductor Structures", *ACS Applied Materials & Interfaces*, **14**, 43897–43906 (2022).

12. K. Chae, S. Lombardo, N. Tasneem, M. Tian, H. Kumarasubramanian*, J. Hur, W. Chern, S. Yu, C. Richter, P. Lomenzo, M. Hoffmann, U. Schroeder, D. Triyoso, S. Consiglio, K. Tapily, R. Clark, G. Leusink, N. Bassiri-Gharb, P. Bandaru, **J. Ravichandran**, A. Kummel, K. Cho, J. Kacher, and A. Khan, "Local Epitaxial Templating Effects in Ferroelectric and Antiferroelectric ZrO_2", *ACS Applied Materials & Interfaces*, **14**, 36771–36780 (2022).

13. K. Ye, B. Zhao*, B. Diroll, **J. Ravichandran** and R. Jaramillo, "Time-Resolved Photoluminescence Studies of Perovskite Chalcogenides", *Faraday Discussions*, **239**, 146-159 (2022).

14. B. Zhao*, M. S. B. Hoque, G-Y. Jung, H. Mei, S. Singh*, G. Ren, M. Milich, Q. Zhao*, N. Wang, H. Chen*, S. Niu*, S-J. Lee, C-T. Kuo, J-S. Lee, J. A. Tomko, H. Wang, M. Kats, R. Mishra, P. E Hopkins, and **J. Ravichandran**, "Orientation Controlled Anisotropy in Single Crystals of Quasi-1D $BaTiS_3$", *Chemistry of Materials*, **34**, 5680 (2022).

15. K. Ye, N. Z. Koocher, S. Filippone, S. Niu*, B. Zhao*, M. Yeung, S. Bone, A. J. Robinson, P. Vora, A. Schleife, L. Ju, A. Boubnov, J. M. Rondinelli, **J. Ravichandran**, R. Jaramillo, "Low-energy electronic structure of perovskite and Ruddlesden-Popper semiconductors in the Ba-Zr-S system probed by bond-selective polarized X-ray absorption spectroscopy, infrared reflectivity, and Raman scattering", *Physical Review B*, **105**, 195203 (2022).

16. Y. Liu*, G. Ren, T. Cao, R. Mishra, and **J. Ravichandran**, "A Second-Principles Method for the Calculation of Electro-Optic Coefficients of Ferroelectric Oxide Thin Films", *Journal of Applied Physics*,**131**, 163101 (2022).

17. M. Hoffmann, Z. Wang, N. Tasneem, A. Zubair, P. V. Ravindran, M. Tian, A. Gaskell, D. Triyoso, S. Consiglio, K. Tapily, R. Clark, J. Hur, S. S. K. Pentapati, M. Dopita, S. Yu, W. Chern, J. Kacher, S. E. Reyes-Lillo, D. Antoniadis, **J. Ravichandran**, S. Slesazeck, T. Mikolajick, and A. I. Khan, "Antiferroelectric negative capacitance from a structural phase transition in zirconia", *Nature Communications*, **13**, 1228 (2022).

18. E. R. Hoglund, D-L. Bao, A. O'Hara, S. Makarem, Z. T. Piontkowski, J. R. Matson, A. K. Yadav, R. C. Haislmaier, R. E-Herbert, J. F. Ihlefeld, **J. Ravichandran**, R. Ramesh, J. D. Caldwell, T. E. Beecham, J. A. Tomko, J. A. Hachtel, S. T. Pantelides, P. E. Hopkins, J. M. Howe, "Emergent Interface Vibrational Structure of Oxide Superlattices", *Nature*, **601**, 556-561 (2022).

19. M. Surendran*, H. Chen*, B. Zhao*, A. Thind, S. Singh*, T. Orvis*, H. Zhao, J-K. Han, H. Htoon, M. Kawasaki, R. Mishra, and **J. Ravichandran**, "Epitaxial Thin Films of a Chalcogenide Perovskite", *Chemistry of Materials*, **33**, 7457-7464 (2021).

20. T. Orvis*, T. Cao, M. Surendran*, H. Kumarasubramanian*, A. Cunniff*, R. Mishra, **J. Ravichandran**, "Direct Observation and Control of Surface Termination in Perovskite Oxide Heterostructures", *Nano Letters*, **21**, 4160-4166 (2021).

21. T. Orvis*, H. Kumarasubramanian*, M. Surendran*, S. Kutagulla*, A. Cunniff*, **J. Ravichandran**, "In situ Monitoring of Composition and Sensitivity to Growth Parameters of Pulsed Laser Deposition", *ACS Applied Electronic Materials*, **3**, 1422-1428 (2021).

22. B. Sun, S. Niu*, R. P. Hermann, J. Moon, N. Shulumba, K. L. Page, B. Zhao*, K. Mahalingam, J. Milam-Guerrero, R. Haiges, M. Mecklenburg, B. C. Melot, Y-D. Jho, B. M. Howe, A. Alatas, B. Winn, M. E. Manley, **J. Ravichandran**, A. J. Minnich, "High-frequency atomic tunneling yields ultralow and glass-like thermal conductivity in chalcogenide single crystals", *Nature Communications* **11,** 6039 (2020). [**Featured in EurekAlert!, Materials Today, Phys.org, Science Daily**]

23. S. Filippone, B. Zhao*, S. Niu*, N. Z. Koocher, D. Silevitch, I. Fina, J. M. Rondinelli, **J. Ravichandran**, R. Jaramillo, "Discovery of highly-polarizable semiconductors $BaZrS_3$ and $Ba_3Zr_2S_7$", *Physical Review Materials*, **4**, 091601(R) (2020).

24. J. Tao, D. Sarkar, S. Weng, T. Orvis*, R. Ahsan, S. Kale, Y. Xu, H. Y. Chae, F. Greer, **J. Ravichandran**, C. Sideris, and R. Kapadia, "High Mobility Large Area Single Crystal III-V Thin Film Templates Directly Grown on Amorphous SiO_2 on Silicon", *Applied Physics Letters*, **117**, 042103 (2020).

25. D. Sarkar, J. Tao, R. Ahsan, D. Yang, T. Orvis*, S. Weng, F. Greer, **J. Ravichandran**, C. Sideris, and R. Kapadia, "Monolithic High-Mobility InAs on Oxide Grown at Low Temperature", *ACS Applied Electronic Materials* , **2(7)**, 1997–2002 (2020).

26. S. Niu*, B. Zhao*, E. Bianco, J. Zhou*, M. E. McConney, R. Haiges, **J. Ravichandran**, "Crystal growth of perovskite chalcogenide $BaZrS_3$ and Ruddlesden-Popper phase $Ba_3Zr_2S_7$", *Journal of Materials Research*, **34 (22)**, 3819 (2019). **[Invited Peer-reviewed Article]**

27. W. Li, S. Niu*, B. Zhao*, R. Haiges, **J. Ravichandran**, A. Janotti, "Band gap evolution in Ruddlesden-Popper phases", *Physical Review Materials*, **3**, 101601(R) (2019). **[Rapid Communication]**

28. R. Jaramillo, **J. Ravichandran**, "In Praise and in Search of Highly-Polarizable Semiconductors: Technological promise and discovery strategies", *APL Materials*, **7**, 100902 (2019). **[Invited Peer-reviewed Perspective]**

29. T. Orvis*, M. Surendran*, Y. Liu*, A. Cunniff*, **J. Ravichandran**, "*In situ* Auger electron spectroscopy of complex oxide surfaces grown by pulsed laser deposition", *Journal of Vacuum Science and Technology A*, **37**, 061401 (2019).

30. J. Wu, X. Cong, S. Niu*, F. Liu, H. Zhao, Z. Du, **J. Ravichandran**, P-H. Tan, H. Wang, "Linear Dichroism Conversion in Quasi One-Dimensional Perovskite Chalcogenide", *Advanced Materials*, **31 (33),** 1902118 (2019).

31. T. Orvis*, M. Surendran*, Y. Liu*, S. Niu*, S. Muramoto, A. J. Grutter, **J. Ravichandran**, "Electron Doping $BaZrO_3$ *via* Topochemical Reduction", *ACS Applied Materials & Interfaces*, **11 (24),** 21720 (2019).

32. B. Zhao*, **J. Ravichandran**, "Ultra-low Power Microwave Oscillators based on Phase Change Oxides as Solid-State Neurons", *Physical Review Applied*, **11,** 014020 (2019).

33. Y. Liu*, Z. Wang, A. S. Thind, T. Orvis*, D. Sarkar, R. Kapadia, A. Y. Borisevich, R. Mishra, A. I. Khan, **J. Ravichandran**, "Epitaxial growth and Dielectric Characterization of Atomically Smooth $0.5Ba(Zr_{0.2}Ti_{0.8})O_3$–$0.5(Ba_{0.7}Ca_{0.3})TiO_3$ thin films", *Journal of Vacuum Science and Technology A*, **37,** 011502 (2019). **[Journal Cover]**

34. G. Singh-Bhalla, P. B. Rossen, G. K. Palsson, M. Mecklenburg, T. Orvis*, S. Das, Y-L. Tang, S. J. Suresha, D. Yi, A. Dasgupta, V. G. Ruiz, A. K. Yadav, M. Trassin, J. T. Heron, C. S. Fadley, R. Pentcheva, **J. Ravichandran**, R. Ramesh, "Unexpected Termination Switching and Polarity

Compensation in the $LaAlO_3/SrTiO_3$ Heterostructures", *Physical Review Materials*, **2,** 112001(R) (2018). **[Editor's Suggestion, Rapid Communication]**

35. S. Niu*, J. Milam-Guerrero, Y. Zhou*, K. Ye*, B. Zhao*, B. C. Melot, **J. Ravichandran**, "Thermal Stability Study of Transition Metal Perovskite Sulfides", *Journal of Materials Research*, **33 (24),** 4135-4143 (2018). **[Invited Peer-reviewed Article]**

36. Y. Liu*, S. Niu*, T. Orvis*, H. Zhang, H. Wang, **J. Ravichandran**, "Epitaxial Growth and Electrical Properties of VO_2 on LSAT (111) substrate", *Journal of Vacuum Science and Technology A*, **36,** 061506 (2018).

37. S. Niu*, H. Zhao, Y. Zhou*, H. Huyan*, B. Zhao*, J. Wu, S. B. Cronin, H. Wang, **J. Ravichandran**, "Mid-wave and Long-wave IR Linear Dichroism in a Hexagonal Perovskite Chalcogenide", *Chemistry of Materials*, **30 (15)**, 4897-4901 (2018).

38. S. Niu*, D. Sarkar, K. Williams, Y. Zhou*, Y. Li, E. Bianco, H. Huyan*, S. B. Cronin, M. E. McConney, R. Haiges, R. Jaramillo, D. J. Singh, W. A. Tisdale, R. Kapadia, **J. Ravichandran**, "Optimal Bandgap in a 2D Ruddlesden–Popper Perovskite Chalcogenide for Single-Junction Solar Cells", *Chemistry of Materials*, **30 (15)**, 4882-4886 (2018).

39. S. Niu*, G. Joe, H. Zhao, Y. Zhou*, T. Orvis*, H. Huyan*, J. Salman, K. Mahalingam, B. Urwin, J. Wu, Y. Liu*, T. Tiwald, S. B. Cronin, B. M. Howe, M. Mecklenburg, R. Haiges, D. J. Singh, H. Wang, M. Kats, **J. Ravichandran**, "Giant optical anisotropy in a quasi-1D crystal", *Nature Photonics*, **12,** 392-396 (2018). [**Featured in Nature Photonics – News and Views, Materials Today, Viterbi News, EurekaAlert, IEEE Electronics 360 , Laser Focus World , Compound Semiconductor Magazine and many more; Web of Science – Highly Cited Paper** - As of November/December 2020, this highly cited paper received enough citations to place it in the top 1% of the academic field of Physics based on a highly cited threshold for the field and publication year (Data from Essential Science Indicators).]

40. J. P. Feser and **J. Ravichandran**, "More Power to Pyroelectrics", *Nature Materials*, **17**, 385 (2018) (News and Views). **[Non-peer reviewed invited commentary]**

41. D. Sarkar, W. Wang, M. Mecklenburg, A. Clough, M. Yeung, C. Ren, Q. Lin, L. Blankemeier, S. Niu*, H. Zhao, H. Shi, H. Wang, S. Cronin, **J. Ravichandran**, M. Luhar, R. Kapadia, "Confined Liquid Phase Growth of Crystalline Compound Semiconductors on Any Substrate", *ACS Nano*, **12(6)**, 5158-5167 (2018).

42. D. Sarkar, W. Wang, Q. Lin, J. Tao, M. Mecklenburg, **J. Ravichandran**, R. Kapadia, "Buffer insensitive Optoelectronic Properties of InP-on-Si with Templated Liquid Phase Growth", *Journal of Vacuum Science and Technology B*, **36(3),** 031204 (2018).

43. S.Y.F. Zhao, G.A. Elbaz, D. K. Bediako, C. Yu, D.K. Efetov, Y. Guo, **J. Ravichandran**, K.-A. Min, S. Hong, T. Taniguchi, K. Watanabe, L.E. Brus, X. Roy, and P. Kim, "Controlled Electrochemical Intercalation of graphene/ hBN van der Waals Heterostructures", *Nano Letters*, **18 (1),** 460 (2018).

44. K. Luo*, S. Niu*, D. Shah*, A. Lonkar*, Y. Liu*, and **J. Ravichandran**, "Perovskite Oxide Multilayers as Soft X-ray Mirrors", *Materials Research Bulletin*, **98,** 206 (2018).

45. S. Ghosh, S. Niu*, M. Yankova, M. Mecklenburg, S. M. King, **J. Ravichandran**, R. K. Kalia, A. Nakano, P. Vashishta, and P. Setlow, "Analysis of killing of growing cells and dormant and germinated spores of *Bacillus* species by black silicon nanopillars", *Scientific Reports*, **7,** 17768 (2017).

46. Q. Lin, D. Sarkar, Y. Lin, M. Yeung, L. Blankemeier, J. Hazra, W. Wang, S. Niu*, **J. Ravichandran**, Z. Fan, R. Kapadia, "A Scalable Indium Phosphide Thin-Film Nanophotonics Platform for Photovoltaic and Photoelectrochemical Devices", *ACS Nano* **11 (5),** 5113 (2017).

47. S. Niu*, H. Huyan*, Y. Liu*, M. Yeung, K. Ye*, L. Blankemeier, T. Orvis*, D. Sarkar, D. J. Singh, R. Kapadia, and **J. Ravichandran**, "Band-Gap Control *via* Structural and Chemical Tuning of Transition Metal Perovskite Chalcogenides", *Advanced Materials* **29**, 1604733 (2017) **[Featured in Advanced Science News, Nanowerk, Sciencenewsline, Phys.org, and many more]**.

48. **J. Ravichandran,** "Thermoelectric and Thermal Transport Properties of Complex Oxide Thin Films, Heterostructures and Superlattices", *Journal of Materials Research* **32** (1), 183 (2017). [**Invited Peer-reviewed Review**: **Focus issue on Early Career Scholars in Materials Science**]

Pre-USC:

49. **J. Ravichandran**, C. R. Serrao, D. K. Efetov, D. Yi, Y. S. Oh, S-W. Cheong, R. Ramesh and P. Kim, "Ambipolar Transport and Magnetoresistance Crossover in a Mott Insulator, Sr_2IrO_4", *Journal of Physics: Condensed Matter* **28**, 505304 (2016). **[IOPSelect - Articles from the last 12 months that have been chosen by our editors for their novelty, significance and potential impact on future research].**

50. M. Huang, G. Jnawali, J.-F. Hsu, S. Dhingra, H. Lee, S. Ryu, F. Bi, F. Ghahari, **J. Ravichandran**, L. Chen, P. Kim, C.-B. Eom, B. D'Urso, P. Irvin, and J. Levy, *APL Materials* **3**, 062502 (2015).

51. W. Gao, A. I. Khan, X. Marti, C. Nelson, C. R. Serrao, **J. Ravichandran,** R. Ramesh and S. Salahuddin, "Room Temperature Ferroelectric Negative Capacitance in a ferroelectric-dielectric superlattice heterostructure", *Nano Letters* **14,** 5814 (2014).

52. **J. Ravichandran,** A. K. Yadav, R. Cheaito, P. B. Rossen, A. Soukiassian, S. J. Suresha, J. C. Duda, B. M. Foley, C-H. Lee, Y. Zhu, A. W. Lichtenberger, J. E. Moore, D. A. Muller, D. G. Schlom, P. E. Hopkins, A. Majumdar, R. Ramesh and M. A. Zurbuchen, "Crossover from incoherent to coherent phonon scattering in epitaxial oxide superlattices", *Nature Materials* **13,** 168-172 (2014). **[Web of Science – Highly Cited Paper** - As of November/December 2020, this highly cited paper received enough citations to place it in the top 1% of the academic field of Materials Science based on a highly cited threshold for the field and publication year (Data from Essential Science Indicators).**]**

53. A. Biswas, P. B. Rossen, **J. Ravichandran,** Y-H. Chu, Y-W. Lee, C-H. Yang, R. Ramesh, Y. H. Jeong, "Creating both A-site and B-site terminated surfaces on oxide substrates", *Applied Physics Letters,* **102,** 051603 (2013).

54. E. Ertekin, V. Srinivasan, **J. Ravichandran**, P. B. Rossen, W. Siemons, A. Majumdar, R. Ramesh and J. Grossman, "Interplay between intrinsic defects, doping and free carriers in perovskite thin films", *Physical Review B,* **85,** 195460 (2012).

55. J. E. Kleibeuker, B. Kuiper, S. Harkema, D. H. A. Blank, G. Koster, G. Rijnders, P. Tinnemans, E. Vlieg, P. B. Rossen, **J. Ravichandran**, R. Ramesh, G. Portale, W. Siemons and J. M. Szepieniec, "Surface analysis of polar $DyScO_3$ (110)", *Physical Review B,* **85**, 165413 (2012).

56. **J. Ravichandran,** A. K. Yadav, W. Siemons, M. A. McGuire, V. M. Wu, A. Majumdar and R. Ramesh, "Size effects on thermoelectricity in a strong correlated electron system", *Physical Review B,* **85,** 085112 (2012).

57. K. R. Balasubramanian, V. M. Kao, **J. Ravichandran,** P. B. Rossen, W. Siemons and J. W. Ager III, "Semiconductor thin films directly from mineral – Study of structural, optical and transport characteristics of Cu_2O thin films from malachite mineral and synthetic copper oxide", *Thin solid films,* **520,** 3914 (2012).

58. D-W. Oh, **J. Ravichandran,** C-W. Liang, W. Siemons, B. Jalan, C. M. Brooks, M. Huijben, D. G. Schlom, S. Stemmer, L. W. Martin, A. Majumdar, R. Ramesh and D. G. Cahill, "Thermal conductivity as a metric for the crystalline quality of $SrTiO_3$ epitaxial layers", *Applied Physics Letters,* **98,** 221904 (2011).

59. **J. Ravichandran,** J. T. Kardel, M. L. Scullin, J.-H. Bahk, H. Heijmerikx, J. E. Bowers and A. Majumdar, "An apparatus for simultaneous measurement of electrical conductivity and thermopower of thin films in the temperature range of 300-750 K", *Review of Scientific Instruments,* **82,** 015018 (2011).

60. **J. Ravichandran,** W. Siemons, M. L. Scullin, S. Mukerjee, M. Huijben, J. E. Moore, A. Majumdar and R. Ramesh, "Tuning the electronic effective mass in double-doped $SrTiO_3$", *Physical Review B,* **83,** 035101 (2011).

61. G. Singh-Bhalla, C. Bell, **J. Ravichandran,** W. Siemons, Y. Hikita, S. Salahuddin, A. F. Hebard, H. Y. Hwang and R. Ramesh, "Built-in and induced polarization across $LaAlO_3/SrTiO_3$ heterojunctions", *Nature Physics*, **7,** 80 (2011).

62. **J. Ravichandran,** W. Siemons, D-W. Oh, J. T. Kardel, A. Chari, H. Heijmerikx, M. L. Scullin, A. Majumdar, R. Ramesh and D. G. Cahill, "High temperature thermoelectric response of double-doped $SrTiO_3$ epitaxial films", *Physical Review B*, **82,** 165126 (2010).

63. J. Kleibeuker, G. Koster, W. Siemons, D. Dubbink, B. Kuiper, J. L. Blok, C-H. Yang, **J. Ravichandran**, R. Ramesh, J. E. ten Elshof, D. H. A. Blank and G. Rijnders, "Atomically defined rare-earth scandate crystal surfaces", *Advanced Functional Materials*, **20,** 3490 (2010).

64. **J. Ravichandran,** W. Siemons, H. Heijmerikx, M. Huijben, A. Majumdar and R. Ramesh, "An epitaxial transparent conducting perovskite oxide: double-doped $SrTiO_3$", *Chemistry of Materials*, **22,** 3983 (2010).

65. M. L. Scullin, **J. Ravichandran**, C. Yu, M. Huijben, J. Seidel, A. Majumdar and R. Ramesh, "Pulsed-laser deposition-induced reduction of $SrTiO_3$ crystals", *Acta Materialia*, **58,** 457 (2010).

66. S. P. Mondal, S. K. Ray, **J. Ravichandran** and I. Manna, "Temperature dependent growth and optical properties of SnO_2 nanowires and nanobelts", *Bulletin of Materials Science*, **33 (4),** 357 (2010).

67. S. Maiti, M. Pastor, R. S. Sundaram, **J. Ravichandran**, K. Biswas and I. Manna, **"**Synthesis and characterization of nanocrystalline dysprosia stabilized zirconia based electrolyte for intermediate-temperature solid oxide fuel cell**"**, *Journal of alloys and compounds*, **475,** 587 (2009).

68. N. Chakraborti, R. Sreevathsan, **R. Jayakanth** and B. Bhattacharya, "Tailor-made material design: An evolutionary approach using multi-objective genetic algorithms**"**, *Computational Materials Science*, **45 (1),** 1 (2009).

69. **J. Ravichandran**, A. G. Manoj, J. Liu, I. Manna and D. L. Carroll, **"**A novel polymer nanotube composite for photovoltaic packaging applications**"**, *Nanotechnology*, **19**, 085712 (2008).

70. N. Chakraborti, **R. Jayakanth**, S. Das, E.D. Çalisir, and Ş. Erkoç, "Evolutionary and genetic algorithms applied to Li^+-C system: calculations using differential evolution and particle swarm algorithm", *Journal of Phase Equilibria and Diffusion*, **28** (2), 140-149 (2007).

71. N. Chakraborti, S. Das, **R. Jayakanth**, R. Pekoz and Ş. Erkoç, **"**Genetic algorithms applied to Li+ ions contained in carbon nanotubes: an investigation using particle swarm optimization and differential evolution along with molecular dynamics**"**, *Materials and Manufacturing Processes*, **22** (5), 562-569 (2007).

72. S. R. C. Vivekchand, **R. Jayakanth**, A. Govindaraj and C. N. R. Rao, "The problem of purification of single-walled carbon nanotubes", *Small*, **1** (10), 920-923 (2005).

73. R. Nandan, R. Rai, **R. Jayakanth**, S. Moitra, N. Chakraborti and A. Mukhopadhyay, "Regulating crown and flatness during hot rolling: a multi-objective optimization study using genetic algorithms", *Materials and Manufacturing Processes*, **20** (3), 459-478 (2005).

CONFERENCE PROCEEDINGS

1. J. Ravichandran, W. Siemons, J. Kardel, H. Heijmerikx, A. Chari, D. Oh, D. Cahill, R. Ramesh, and A. Majumdar. "Thermoelectricity of Double Doped Strontium Titanate." In *International Heat Transfer Conference*, vol. 49392, pp. 839-843. 2010.

2. C. Zhou, X. Liu, S. Han, K. Ryu, B. Lei, A. Badmaev, J. Ravichandran and L. Dong. "A nanotube-on-insulator (NOI) approach toward scalable and integratable nanotube devices on sapphire." In *2006 8th International Conference on Solid-State and Integrated Circuit Technology Proceedings*, pp. 1065-1067. IEEE, 2006.

THESIS

- J. Ravichandran, *Thermal and Electrical Transport in Oxide Heterostructures* (Doctoral dissertation, University of California Berkeley, 2011).

PATENTS

1. S. Niu, G. Joe, M. Kats, and J. Ravichandran "Anisotropic materials and methods of forming anisotropic materials exhibiting high optical anisotropy", International Patent Application WO 2020/068183 A2, published April 02, 2020.

INVITED TALKS AND SEMINARS

Conferences:

1. "Atomistic Polarization Textures", Materials Research Society Fall Meeting, Boston MA – November 30, 2023.
2. "Hybrid Pulsed Laser Deposition of Perovskite and Related Phases of Chalcogenides", European Materials Research Society Spring Meeting, Strasbourg, France – June 1, 2023.
3. "Phase Change Materials for Energy Efficient Computing", Materials Research Society Spring Meeting, San Francisco, CA – April 11, 2023.
4. "Emergent Atomic Polarization Textures in Quasi-1D Hexagonal Chalcogenides", American Physical Society March Meeting 2023, Las Vegas, NV – March 20, 2023 (online).
5. "Tracking the surface chemistry and composition of complex oxides *in situ* during growth", Materials Research Society Spring Meeting 2022, Honolulu, HI – May 12, 2022.
6. "Perovskite Chalcogenides: Emerging Earth Abundant Materials for Sustainable Solar Energy Conversion", European Materials Research Society Fall meeting 2021 – September 20, 2021 (online).
7. "Epitaxial Thin Film Growth of Chalcogenide Perovskites", Materials Research Society Virtual Spring Meeting 2021 – April 22, 2021 (online).
8. "Dimensional Control of Physical Properties in Perovskite Chalcogenides: From Giant Optical Anisotropy to Ultralow Glassy Thermal Conductivity", Electronic Materials and Applications (EMA 2021) (online) – January 19, 2021.
9. "Dimensional Control of Physical Properties in Perovskite Chalcogenides: From Giant Optical Anisotropy to Ultralow Glassy Thermal Conductivity", Materials Research Society Fall and Spring combined Meeting 2020 (online meeting) – Nov 28 – Dec 4, 2020 (online).
10. "*In situ* and Real Time Chemical Analysis of Complex Oxide Thin Film Surfaces Using Pulsed Laser Deposition", The Minerals, Metals & Materials Society Annual Meeting (TMS 2020), San Diego, CA – February 23-27, 2020.
11. "Atomic Scale Elemental Analysis of Complex Oxide Thin Films and Heterostructures", Conference on Electronic Materials and Applications (EMA 2020), Orlando, FL – January 22-24, 2020.
12. "Dimensional Control of Light-Matter Interaction in Perovskite Chalcogenides", 11th International Conference on Advanced Materials and Devices, Jeju, South Korea – December 13, 2019.
13. "Dimensional Control of Light-Matter Interaction in Perovskite Chalcogenides", Materials Research Society Fall Meeting 2019 (MRS 2019), Boston, MA – December 2, 2019.
14. "Dimensional Control of Light-Matter Interaction in Perovskite Chalcogenides", SPIE Conference on Low Dimensional Materials and Devices 2019, San Diego CA – August 13, 2019.

15. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", Conference on Electronic Materials and Applications (EMA 2019), Orlando, FL – January 24, 2019.

16. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", 21st International Conference on Ternary and Multinary Compounds, Boulder, CO – September 9-13, 2018.

17. "Optical Properties of Perovskite Chalcogenides – Materials for Visible to Infrared Optoelectronics", 26th International Materials Research Congress – 2017 (IMRC 2017), Cancun, Mexico (Organized by Materials Research Society, USA and Sociedad Mexicana de Materiales, Mexico) – August 22, 2017

18. "Thermal and Thermoelectric Transport in Perovskites", 9th International Conference on Materials for Advanced Technologies (ICMAT 2017), Singapore (organized by Materials Research Society, Singapore) –June 22, 2017

19. "Thermal Transport in Heterostructures and Superlattices of Complex Oxides", Energy Materials Nanotechnology Meeting on Thermoelectric Materials 2016 (EMN 2016), Orlando, FL – February 22, 2016

20. "Nanoscale Heat Transport in Complex Oxide Thin Films and Superlattices", Conference on Electronic Materials and Applications 2016 (EMA 2016), Orlando, FL (Organized by American Ceramics Society) – January 22, 2016

21. "Complex Oxides for Energy Conversion", Materials Research Society Spring meeting 2011 (MRS Spring 2011), San Francisco, CA – April 28, 2011.

Departmental/academic/research seminars:

22. "Polarization Textures : Beyond Ferroelectrics", Department of Condensed Matter Physics and Materials Science Seminar Series, Tata Institute of Fundamental Research, Mumbai, November 3, 2023.
23. "Polarization Textures : Beyond Ferroelectrics", **Colloquium**, Department of Physics, Indian Institute of Technology, Bombay, November 2, 2023.
24. "Polarization Textures : Beyond Ferroelectrics", New Chemistry Unit Seminar Series, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India, October 31, 2023.
25. "Polarization Textures : Beyond Ferroelectrics", MSE Seminar Series, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge MA, September 26, 2023.
26. "Phase change materials for neuromorphic computing", USC Artificial Intelligence – Futures Symposium, March 17, 2023 (online).
27. "Quasi-1D Hexagonal Chalcogenides: A Novel Materials Platform for Next Generation Infrared Opto-electronics", **Colloquium**, Department of Chemical and Biomolecular Engineering's Colloquium Series, Tandon School of Engineering, New York University, October 14, 2022 (online).
28. "Tracking the surface chemistry and composition of complex oxides *in situ* during growth", Twente Solid State Technology webinar on "PLD thin films; Advanced characterization in lab and beyond", July 6, 2022 (online).
29. "Quasi-1D Hexagonal Chalcogenides: Materials on the Edge!", Institute of Materials Science and Engineering Seminar Series, Washington University in St. Louis, April 25, 2022.
30. "Quasi-1D Hexagonal Chalcogenides: A Novel Material Platform for Electronic and Photonic Functionalities", Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, October 21, 2021.
31. "Quasi-1D Hexagonal Chalcogenides: A Novel Material Platform for Electronic and Photonic Functionalities", Department of Materials Science and Engineering, University of Wisconsin, Madison, September 23, 2021.

32. "Tracking the Surface Chemistry and Composition of Complex Oxides *in situ* during Growth : From Stoichiometric Deposition to Termination Switching", Hsinchu Online Oxide Forum – September 9, 2021.
33. "Quasi-1D Hexagonal Chalcogenides: Materials on the Edge!", Mork Family Department of Chemical Engineering and Materials Science Seminar Series, University of Southern California, Los Angeles, CA – August 31, 2021.
34. "Low Limits of Thermal Conductivity in Materials: Quantum vs Classical Approach", Inorganics and Ceramics Chapter Seminar, Tech Forum at 3M, Minneapolis – May 20, 2021 (online).
35. "Quasi-1D Hexagonal Chalcogenides: From Giant Optical Anisotropy to Ultralow Glassy Thermal Conductivity", **Colloquium**, Materials Research Lecture Series, California Institute of Technology, Pasadena CA – April 21, 2021 (online).
36. "Quasi-1D Hexagonal Chalcogenides: From Giant Optical Anisotropy to Ultralow Glassy Thermal Conductivity", Virtual Conference on Condensed Matter Physics, TIFR Center for Interdisciplinary Sciences, Hyderabad – April 13, 2021 (online).
37. "*In situ* and Real Time Chemical Analysis of Complex Oxide Thin Film Surfaces Using Pulsed Laser Deposition", Graduate Seminar, Materials Science Program, Oregon State University, Corvallis OR – October 29th, 2020 (online).
38. "Quasi-1D Hexagonal Chalcogenides: From Giant Optical Anisotropy to Ultralow Glassy Thermal Conductivity", **Colloquium**, Department of Physics, University of Washington, Seattle WA – October 5th, 2020 (online).
39. "Quasi-1D Hexagonal Chalcogenides: From Giant Optical Anisotropy to Ultralow Glassy Thermal Conductivity", Ming Hsieh Institute Nano Materials and Devices seminar series, University of Southern California – May 22, 2020 (online).
40. "Perovskite Chalcogenides : New Semiconductors for Visible to Infrared Optoelectronics", Materials Seminar, University of California, Santa Barbara, CA – November 4, 2019.
41. "Dimensional Control of Light-Matter Interaction in Perovskite Chalcogenides", Condensed Matter Physics Seminar Series, University of California, Irvine, CA – October 30, 2019.
42. "Perovskite Chalcogenides : New Semiconductors for Visible to Infrared Optoelectronics", **Colloquium,** Department of Physics and Astronomy, University of Georgia, Athens, GA – March 28, 2019.
43. "Dimensional Control of Light-Matter Interaction in Perovskite Chalcogenides", Nano@Tech Seminar, Georgia Institute of Technology, Atlanta, GA – March 26, 2019.
44. "Perovskite Chalcogenides : New Semiconductors for Visible to Infrared Optoelectronics", American Society for Metals Orange Coast Chapter Monthly Seminar – February 20, 2019.
45. "Perovskite Chalcogenides : New Semiconductors for Visible to Infrared Optoelectronics", Condensed Matter Seminar Series, Department of Physics, University of California, Berkeley – December 3, 2018.
46. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", **Colloquium,** Department of Physics, Indian Institute of Science, Bangalore, India – July 13, 2018.
47. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India – July 11, 2018.
48. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", Institute of Materials Research and Engineering, A*STAR, Singapore – June 28, 2018.
49. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", **Colloquium,** Department of Physics, California State University, Los Angeles – April 19, 2018.
50. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", Ming Hsieh Institute Nano Materials and Devices seminar series, University of Southern California – January 11, 2018

51. "Shining Light on Perovskite Chalcogenides: Semiconductors for Visible to Infrared Optoelectronics", **Colloquium,** Materials Science and Engineering, Boston University – November 29, 2017
52. "Shining Light on Perovskite Chalcogenides", **Colloquium,** Institute of Quantum Computing, University of Waterloo – November 13, 2017
53. "Functional Perovskites: From Oxides to Sulfides", Nanoelectronic Materials Branch, Air Force Research Laboratory, Dayton, OH – August 17, 2017
54. "Nanoscale Heat Transport in Complex Oxide Thin Films and Superlattices", Jet Propulsion Laboratory, Pasadena, CA – July 25, 2017
55. "Perovskite Chalcogenides : A New Class of "Transition Metal" Based Semiconductors", Condensed Matter Seminar Series, Department of Physics and Astronomy, University of Utah, Salt Lake City – March 28, 2017
56. "Nanoscale Heat Transport in Complex Oxide Thin Films", Chemical Engineering and Materials Science seminar, University of California, Irvine – May 8, 2015
57. "Benchmarking Materials Quality with Thermal Transport", Mechanics and Materials Seminar, University of California, San Diego – February 23, 2015
58. "Benchmarking Materials Quality with Thermal Transport", BBN Raytheon, Cambridge, MA, Special Seminar – November 25, 2014
59. "Magneto-electric transport in filling controlled Mott insulators", TRIUMF, Vancouver, BC, Canada – Special Seminar – August 28, 2014
60. "Thermoelectricity in complex oxides", Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH – April 16, 2014
61. "Engineering transport properties with tailored interfaces", Mork Family Department of Chemical Engineering and Materials Science, University of Southern California, Los Angeles, CA – April 4, 2014
62. "Exploring coherent transport in complex oxides", Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Kharagpur, India – April 4, 2013
63. "Thermoelectricity in Perovskite Titanates", Department of Physics, Rutgers University, Piscataway, NJ – April 6, 2012
64. "Complex oxides for thermoelectric energy conversion", Materials Science and Engineering and Mechanical and Aerospace Engineering Joint Seminar, University of Virginia, Charlottesville – January 10, 2012
65. "Thermoelectricity in complex oxides", Department of Physics seminar, Indian Institute of Science, Bangalore, India – October 18, 2011
66. "Thermoelectricity in complex oxides", MRSEC special seminar, Columbia university, NY – August 19, 2011

Invited Workshops:

67. "Perovskite Chalcogenides – Novel Semiconductors for Solar Cells to Infrared Detectors", Symposium on "Materials Genome Towards Exascale", Spetses, Greece – June 12, 2018.

General Audience Talks:

68. "How to do we know where atoms sit in a material?", W. T. Rusch Colloquium for undergraduate engineering honors students, University of Southern California – February 4th, 2022.
69. "Tips and advice for tenure track years", Early career luncheon – USC Viterbi School of Engineering, April 21st, 2022.

CONTRIBUTED CONFERENCE PRESENTATIONS

- **B. Zhao**, G.-Y. Jung, C. Zhou, **H. Chen**, **S. Singh**, G. Ren, N. Settineri, S. J. Teat, D. Xiao, R. Mishra, and **J. Ravichandran**, 2023 MRS Spring Meeting & Exhibit, April 10 – 14, 2023, San Francisco, California, USA.
- **M. Surendran**, **S. Singh**, **H. Chen**, **B. Zhao** and **J. Ravichandran**, 2023 MRS Spring Meeting & Exhibit, April 10 – 14, 2023, San Francisco, California, USA.
- **H. Chen,** and **J. Ravichandran**, 2023 MRS Spring Meeting & Exhibit, April 10 – 14, 2023, San Francisco, California, USA.
- G. Ren, G.-Y. Jung, **H. Chen**, C. Wang, **B. Zhao**, R. K. Vasudevan, A. Lupini, M. Chi, D. Xiao, **J. Ravichandran**, J. A. Hachtel, R. Mishra, 2023 MRS Spring Meeting & Exhibit, April 10 – 14, 2023, San Francisco, California, USA.
- G.-Y. Jung, C. Wang, G. Ren, **B. Zhao**, B. Ilyas, **H. Chen**, N. Gedik, **J. Ravichandran**, D. Xiao, R. Mishra, 2023 MRS Spring Meeting & Exhibit, April 10 – 14, 2023, San Francisco, California, USA.
- **C. Wu**, **M. Surendran**, and **J. Ravichandran**, WE local 2023, Seattle, Washington, USA.
- **S. Singh**, A. I. Maniyanganam, B. Zayat, G. D. D. Cruz, **B. Zhao**, E. McClure, N. Humphrey, B. Melot, S. M. Sharada, S. Narayan, and **J. Ravichandran**, APS March 2023, Las Vegas, Nevada, USA.
- **B. Zhao**, G. Ren, H. Mei, V. Wu, **S. Singh**, G.-Y. Jung, **H. Chen**, R. Giovine, N. Settineri, S. J. Teat, B. C. Chakoumakos, R. Clement, M. A. Kats, and R. Mishra, and **J. Ravichandran**, APS March 2023, Las Vegas, Nevada, USA.
- F. Knoop, M. Menahem, N. Benshalom, **J. Ravichandran**, R. Jaramillo, O. Hellman, O. Yaffe, APS March 2023, Las Vegas, Nevada, USA.
- **M. Surendran**, **H. Chen**, **B. Zhao**, A. S. Thind, **S. Singh**, H. Zhao, J.-K. Han, H. Htoon, M. Kawasaki, R. Mishra and **J. Ravichandran**, 64th Electronic Materials Conference (EMC), June 29-July 1 2022, Columbus, Ohio, USA.
- **H. Kumarasubramanian**, and **J. Ravichandran**, 64th Electronic Materials Conference (EMC), June 29-July 1 2022, Columbus, Ohio, USA.
- **S. Singh**, **B. Zhao**, A. I. Maniyanganam, B. Zayat, E. McClure, J. Ran, N. Humphrey, B. Melot, S. M. Sharada, S. Narayan, and **J. Ravichandran**, MRS Spring Meeting (2022).
- **H. Kumarasubramanian**, and **J. Ravichandran**, MRS Spring Meeting (2022).
- **B. Zhao**, G. Ren, H. Mei, G.-Y. Jung, **S. Singh**, J. Li, A. S. Thind, J. Salman, **S. Niu**, N. Wang, N. Settineri, S. J. Teat, B. C. Chakoumakos, H. Wang, D. Xiao, M. A. Kats, R. Mishra, and **J. Ravichandran**, MRS Spring Meeting (2022).
- M. Surendran, H. Chen, B. Zhao, A. S. Thind, S. Singh, T. Orvis, H. Zhao, J.-K. Han, H. Htoon, M. Kawasaki, R. Mishra and **J. Ravichandran**, MRS Spring Meeting (2022).
- H. Chen, B. Ilyas, B. Zhao, E. Ergecen, G. Ren, B. Chakoumakos, S. Teat, R. Mishra, N. Gedik and **J. Ravichandran**, MRS Spring Meeting (2022).
- G. Ren, B. Zhao, H. Mei, J. Salman, A. S. Thind, N. Wang, T. Cao, J. Cavin, H. Wang, M. Chi, M. A. Kats, **J. Ravichandran**, R. Mishra, MRS Spring Meeting (2022).
- T. Salzillo, M. Menahem, B. Zhao, S. Niu, **J. Ravichandran**, R. Jaramillo, O. Yaffe, MRS Spring Meeting (2022).
- H. Chen, B. Ilyas, B. Zhao, E. Ergecen, J. Mutch, G. Ren, B. Chakoumakos, S. Teat, R. Mishra, J. Chu, N. Gedik, **J. Ravichandran**, APS March Meeting (2022).
- H. Mei, J. Salman, **B. Zhao**, G. Ren, G. Joe, **S. Niu**, H. Zhao, **Y. Zhou**, **T. Orvis**, **H. Huyan**, J. Wu, **Y. Liu**, H. Wang, R. Mishra, **J. Ravichandran**, M. Kats, High Contrast Metastructures XI, SPIE OPTO, January 22 – February 28, 2022, Virtual.
- G. Ren, B. Zhao, A. S. Thind, T. Cao, J. Cavin, **J. Ravichandran** and R. Mishra, ACerS EMA 2022, January 19-21, Virtual.
- H. Chen, Y. Liu, M. Surendran, H. Kumarasubramanian, **J. Ravichandran**, MRS Fall Meeting (2021). (Poster)
- B. Zhao, G. Ren, H. Mei, S. Singh, J.Salman, S. Niu, N. Wang, Q. Zhao, H. Wang, S. J. Teat, M.A. Kats, R. Mishra and **J. Ravichandran**, MRS 2021 Fall, Boston.
- M. S. B. Hoque, B.Zhao, E. Hoglund, E. O. Agyemang, M. Surendran, K. Aryana, G. Balasubramanian, J. Gaskins, J. Tomko E. Scott, **J. Ravichandran** and P. Hopkins, MRS 2021 Fall, Boston.

- M. Surendran, H. Chen, B. Zhao, A. S. Thind, S. Singh, T. Orvis, H. Zhao, J-K. Han, H. Htoon, M. Kawasaki, R. Mishra and **J. Ravichandran**, European Materials Research Society (EMRS) Fall 2021 Meeting, September 20-23, 2021 (Virtual Meeting).
- H. Mei, J. Salman, B. Zhao, G. Joe, S. Niu, H. Zhao, Y. Zhou, T. Orvis, H. Huyan, J. Wu, Y. Liu, H. Wang, **J. Ravichandran**, and M. A. Kats, OSA Advanced Photonics Congress 2021.
- K. Ye, B. Zhao, B. Diroll, S. Niu, **J. Ravichandran**, R. Jaramillo, OSA Advanced Photonics Congress 2021.
- P. Balakrishnan, P. Quarterman, S. Muramoto, D. F. Segedin, M. Surendran, R. Patel, M. Fitzsimmons, A. Huon, J. Stahn, S. Middey, **J. Ravichandran**, J. Mundy, A. Grutter, APS March Meeting 2021 (online).
- R. Hermann, M. Manley, B. Winn, K. Page, A. Minnich, J. Moon, A. Alatas, **J. Ravichandran**, APS March Meeting 2021 (online).
- J Luo, B Zhao, Z Zhang, H Chen, A Thind, S Hartman, B Sadtler, **J. Ravichandran**, R. Mishra, APS March Meeting 2021 (online).
- G. Ren, B. Zhao, A. Thind, J. Salman, N. Wang, T. Cao, J. Cavin, H. Wang, M. Kats, **J. Ravichandran**, R. Mishra , APS March Meeting 2021 (online).
- E. Hoglund, J. Hachtel, T. Beechem, D-L. Bao, Z. Piontkowski, J. Caldwell, J. Ihlefeld, **J. Ravichandran**, A. O'Hara, J. Matson, R. Ramesh, S. Pantelides, P. Hopkins, J. Howe, APS March Meeting 2021 (online).
- J. Luo, B. Zhao, Z. Zhang, H. Chen, A. Thind, S. Hartman, B. Sadtler, **J. Ravichandran**, R. Mishra, APS March Meeting 2021 (online).
- S. Niu, F. Ke, B. Zhao, **J. Ravichandran**, Y. Lin, W. Mao, APS March Meeting 2021 (online).
- H. Chen, B. Zhao, J. Mutch, S. Niu, S. Teat, J. Chu, B. Chakoumakos, R. Mishra, **J. Ravichandran**, ACerS Conference on Electronic Materials and Applications 2021 (online).
- B. Zhao, J. Salman, S. Niu, A. Thind, N. Wang, G. Ren, H. Chen, M. Surendran, S. Singh, H. Wang, R. Mishra, M. A. Kats, and **J. Ravichandran**, ACerS Conference on Electronic Materials and Applications 2021 (online).
- M. Surendran, H. Chen, B. Zhao, S. Singh, A. Thind, J-K. Han, M. Kawasaki, R. Mishra, **J. Ravichandran,** ACerS Conference on Electronic Materials and Applications 2021 (online).
- Thomas Orvis, Mythili Surendran, Yang Liu, Austin Cunniff, **Jayakanth Ravichandran,** American Vacuum Society Symposium, Columbus OH (2019).
- Shanyuan Niu, Kristopher Williams, Wei Li, Debarghya Sarkar, Fei Hou, Boyang Zhao, Kevin Ye, Elisabeth Bianco, Michael E McConney, David Singh, Jan Seidel, Rafael Jaramillo, Rehan Kapadia, William Tisdale, Anderson Janotti, **Jayakanth Ravichandran**, American Physical Society March Meeting, Boston MA (2019).
- Stephen Filippone, Shanyuan Niu, Kristopher Williams, William A Tisdale, Yi-Yang Sun, **Jayakanth Ravichandran**, Rafael Jaramillo, American Physical Society March Meeting, Boston MA (2019).
- Stephen Filippone, Ignasi Fina, Shanyuan Niu, Boyang Zhao, **Jayakanth Ravichandran**, Dino Klotz, Harry Tuller, Rafael Jaramillo, 2019 IEEE International Symposium on Applications of Ferroelectrics (ISAF), July 14-19, 2019, EPFL Lausanne Switzerland.
- Shanyuan Niu, Debarghya Sarkar, Kristopher Williams, Kevin Ye, Yuwei Li, Elisabeth Bianco, Wei Li, Michael E McConney, Ralf Haiges, Anderson Janotti, David Singh, William Tisdale, Rafael Jaramillo, Rehan Kapadia, Jayakanth Ravichandran, Materials Research Society Fall Meeting, Boston MA (2018).
- Shanyuan Niu, Graham Joe, Huan Zhao, Matthew Mecklenburg, Thomas Tiwald, Krishnamurthy Mahalingam, Han Wang, Mikhail Kats, **Jayakanth Ravichandran**, American Vacuum Society 65th International Symposium and Exhibition, Long Beach, CA (2018).

- Boyang Zhao, **Jayakanth Ravichandran,** American Vacuum Society 65th International Symposium and Exhibition, Long Beach, CA (2018).
- Yang Liu, Shanyuan Niu, Thomas Orvis, Haimeng Zheng, Han Wang, **Jayakanth Ravichandran,** American Vacuum Society 65th International Symposium and Exhibition, Long Beach, CA (2018).
- Bo Sun, Nina Shulumba, Shanyuan Niu, **Jayakanth Ravichandran**, Austin Minnich, American Physical Society March Meeting 2018, Los Angeles CA.
- Thomas Orvis, Yang Liu, Shanyuan Niu, **Jayakanth Ravichandran**, American Physical Society March Meeting 2018, Los Angeles CA.
- Shanyuan Niu, Graham Joe, Huan Zhao, Matthew Mecklenburg, Han Wang, Mikhail Kats, **Jayakanth Ravichandran**, American Physical Society March Meeting 2018, Los Angeles CA.
- Yang Liu, Zheng Wang, James Whitehead, Arka Majumdar, Asif Khan, **Jayakanth Ravichandran,** American Physical Society March Meeting 2018, Los Angeles CA.
- Shanyuan Niu, Huan Zhao, Graham Joe, Yucheng Zhou, Huaixun Huyan, Rehan Kapadia, David Singh, Mikhail Kats, Han Wang, and **Jayakanth Ravichandran**, Materials Research Society Fall Meeting 2017, Boston MA.
- Shanyuan Niu, Graham Joe, Huan Zhao, Matthew Mecklenburg, Han Wang, Mikhail Kats, **Jayakanth Ravichandran**, International Conference on Thermoelectrics 2017, Pasadena CA. (Poster)
- Shanyuan Niu, Huaixun Huyan, Kevin Ye, Rehan Kapadia, **Jayakanth Ravichandran**, Materials Research Society Spring Meeting 2017, Phoenix AZ. (Poster)
- Shu Yang Frank Zhao, Giselle A Elbaz, Dmitri K Efetov, **Jayakanth Ravichandran**, Yinsheng Guo, Louis Brus, Xavier Roy, Philip Kim, American Physical Society March Meeting 2015, San Antonio, TX.
- Mengchen Huang, Giriraj Jnawali, Jen-Feng Hsu, Hyungwoo Lee, Sangwoo Ryu, Feng Bi, Lu Chen, Fereshte Ghahari, **Jayakanth Ravichandran**, Philip Kim, Chang-Beom Eom, Brian D'Urso, Patrick Irvin, Jeremy Levy, American Physical Society March Meeting 2015, San Antonio, TX.
- Ajay Yadav, Aaron Swarz, Ramez Cheaito, **Jayakanth Ravichandran**, Patrick Hopkins, Arun Majumdar, Joel Moore, Ramamoorthy Ramesh, American Physical Society March Meeting 2014, Denver CO.
- **Jayakanth Ravichandran**, Philip DC King, Darrell G Schlom, Kyle M Shen, Philip Kim, American Physical Society March Meeting 2014, Denver CO.
- Mengchen Huang, Sangwoo Ryu, Fereshte Ghahari, Giriraj Jnawali, **Jayakanth Ravichandran**, Patrick Irvin, Philip Kim, Chang-Beom Eom, Jeremy Levy, American Physical Society March Meeting 2014, Denver CO.
- Giriraj Jnawali, Lu Chen, Patrick Irvin, Jeremy Levy, Sangwoo Ryu, Chang-Beom Eom, Fereshte Ghahari, **Jayakanth Ravichandran**, Philip Kim, American Physical Society March Meeting 2014, Denver CO.
- Shu Yang Frank Zhao, Giselle A Elbaz, Dmitri K Efetov, **Jayakanth Ravichandran**, Yinsheng Guo, Natalee Raymond, Louis Brus, Xavier Roy, Philip Kim, American Physical Society March Meeting 2014, Denver CO.
- G Singh-Bhalla, P Rossen, S Jaganath, G Palsson, D Yi, A Dasgupta, **J Ravichandran**, V Ruiz, J Heron, C Fadley, A Yadav, R Pentcheva, R Ramesh, American Physical Society March Meeting 2013, Baltimore MD.
- **Jayakanth Ravichandran**, Dmitri Efetov, Claudy Rayan Serrao, Di Yi, Ramamoorthy Ramesh, Philip Kim, American Physical Society March Meeting 2013, Baltimore MD.
- **Jayakanth Ravichandran**, Ajay Yadav, Ramez Cheaito, Pim Rossen, Siriyara Suresha, Patrick Hopkins, Arun Majumdar, Ramamoorthy Ramesh, American Physical Society March Meeting 2012, Boston MA.

- **Jayakanth Ravichandran**, Ajay K Yadav, Vincent M Wu, Wolter Siemons, Pim B Rossen, Arun Majumdar, and Ramamoorthy Ramesh, Materials Research Society Spring Meeting 2011, San Francisco CA.
- **Jayakanth Ravichandran**, Pim B Rossen, Vincent M Wu, Arun Majumdar, Ramamoorthy Ramesh, American Physical Society March Meeting 2011, Dallas TX.
- **Jayakanth Ravichandran**, Wolter Siemons, Herman Heijmerikx, Joseph P Feser, Arun Majumdar, Ramamoorthy Ramesh, Materials Research Society Spring Meeting 2010, San Francisco CA.
- Wolter Siemons, **Jayakanth Ravichandran**, Herman Heijmerikx, Joseph Feser, Arun Majumdar, R Ramesh, American Physical Society March Meeting 2010, Portland OR.
- **Jayakanth Ravichandran**, Wolter Siemons, Justin Kardel, Herman Heijmerikx, Arvind Chari, Dongwook Oh, David Cahill, Ramamoorthy Ramesh, Arun Majumdar, 10th International Heat Transfer Conference – 2010, Washington DC. (**Conference Proceeding**)
- **Jayakanth Ravichandran**, Wolter Siemons, Herman Heijmerikx, Joseph P Feser, Arun Majumdar, Ramamoorthy Ramesh, Materials Research Society Fall Meeting 2009, Boston MA.
- **Jayakanth Ravichandran**, Matthew L Scullin, Subroto Mukerjee, Joel Moore, R Ramesh, Arun Majumdar, American Physical Society March Meeting 2009, Pittsburgh PA.
- Matthew L Scullin, **Jayakanth Ravichandran**, Mark Huijben, Choongho Yu, Subroto Mukerjee, Joel Moore, Arun Majumdar, R Ramesh, American Physical Society March Meeting 2008, New Orleans, LA.

STUDENT SUPERVISIONS, MENTORING & ADVISING

Current:

Post-Doctoral Fellow(s):

1. Huandong Chen (MASC) (Summer 2023 – present)

Ph.D. Students: (MASC – Materials Science)

1. Boyang Zhao (MASC) – Viterbi Fellow (Fall 2018 – present)
   Screening Exam: Spring 2019; Qualifying Exam: Spring 2022.
2. Mythili Surendran (MASC) – Viterbi Fellow; WiSE Top off Award (Fall 2018 – present)
   Screening Exam: Spring 2019; Qualifying Exam: Spring 2022.
3. Shantanu Singh (MASC) – Annenberg Fellow (Fall 2019 – present)
   Screening Procedure: Fall 2020. Qualifying Exam: Fall 2023.
4. Harish Kumarasubramanian (MASC) – Annenberg Fellow (Fall 2019 – present)
   Screening Procedure: Fall 2020. Qualifying Exam: Fall 2023.
5. Raymond Yu (ECE) – NSF Fellow (Fall 2022 – present)
   Co-advised with Michelle Povinelli (ECE)
6. Claire Wu (MASC) – Annenberg Fellow (Fall 2022 – present)
7. Shivam Nigam (MASC) – Mork Fellow (Fall 2023 – present)
8. Andrew Boyi Lee (MASC) – Viterbi Fellow (Fall 2023 – present)

Undergraduate Students: (ChemE – Chem. Engg.)

1. Claire Archer (BS ChemE) (Spring 2023 – present)

2. Kenta Lin (BS ChemE) (Spring 2023 – present)

Alumni: **Last Known Position**

Post-Doctoral Fellow(s):

1. Dr. Yan-Ting Wang (2021-22) Lam Research

Ph.D. Students:

1. Shanyuan Niu (Ph.D. 2019 (MASC)) Assistant Professor, Nanjing University
   Dissertation Title: *Perovskite Chalcogenides: Emerging Semiconductors for Visible to Infrared Opto-electronics*

2. Thomas Orvis (Ph.D. 2021 (MASC)) Northrop Grumman
   Dissertation Title: *Real Time Surface Analysis of Complex Oxide Thin Films during Pulsed Laser Deposition*

3. Yang Liu (Ph.D. 2022 (MASC)) Leica Instruments, Beijing
   Dissertation Title: *Phase Change Heterostructures for Electronic and Photonic Applications*

4. Huandong Chen (MASC) Postdoc at USC
   Dissertation Title: *Transport Studies of Phase Transitions in a Quasi-1D Hexagonal Chalcogenide*.

M.S. Students:

1. Shiyang Zhang (Materials Science; 2015) Baidu, China
2. Kaihang Luo (Materials Science; 2015-16) Manager, Ningbo Magnetic Materials Co. Ltd
3. Yang Liu (Materials Science; 2016) Leica Instruments, Beijing
4. Huaixun Huyan (Materials Science; 2017) PhD student, UC Irvine
5. Shengyuan Bai (Materials Science; 2017) PhD student, Michigan State
6. Fausto Isreal Mares-Davila (Chemical Engg., 2017) Boeing
7. Ramanamurali Srinivasan (Materials Science, 2018) Intel
8. Boyang Zhao (Materials Science, 2018) PhD student, USC
9. Mythili Surendran (Materials Science, 2018) PhD student, USC
10. Yucheng Zhou (Materials Science, 2018) PhD student, University of Virginia
11. Yuan Xu (Materials Science, 2019) PhD student, University of Virginia
12. Jieyang Zhou (Materials Science, 2019) PhD student, UC Davis
13. Qinai Zhou (Materials Science, 2021) PhD student, USC
14. Qijian Deng (MASC, 2022) Applied Materials, China
15. Abdulaziz Almulaifi (ChemE, 2024) MS at USC
16. Zhengyu Du (MASC, 2023) PhD student, Virginia Tech
17. Meet Hitesh Damani (ChemE, 2023)

Undergraduates:

1. Hannah Cyr (USC BS Chem Engg; 2015-16) Aurizon, Australia
2. William (Yu Ren) Zhou (UPenn BS MSE - SURE Fellow 2016) PhD student at MIT
3. Kunjesh Agashiwala (BITS BS EE - Viterbi India Fellow 2016) PhD student at UCSB
4. Amogh Lonkar (USC BS EE; 2015-17) PhD at UCSC
5. Kangmin Lee (USC BS Chem Engg 2016-17) Takeda Pharmaceuticals
6. Yihong Fan (Tsinghu BS MSE; Summer Intern 2017) PhD student at Minnesota
7. Kevin Ye (USC BS Chem Engg; Fall 2015- Spring 2018) PhD student at MIT
8. Lisa Luciano (USC BS Chem Engg – 2018) Amgen

9. Dhyey Shah (USC BS/MS Electrical Engg.; 2015-20)	MS at NYU
10. Rishabh Sharma (USC BS Chem Engg.; 2018-20)	1910 Genetics
11. Shanmukh Kutagulla (USC BS ChemE; MS – MASC)	PhD student at UT Austin
12. Austin Cunniff (USC BS ChemE)	PhD student at UCSB
13. Rubinder Sekhon (USC BS/MS Mechanical Engg.)	Boeing
14. Goldy Faramarzyan (USC BS ChemE)	FM Global
15. Daniel Thompson (USC BS ChemE)	BS at Columbia University (Transfer)
16. Nathan Ly (BS ChemE)	KPMG
17. Isaiah Wilkies (BS ChemE)	Linde
18. Peggy Kindschuh (BS ChemE)	L'Oreal
19. Miranda Hack (BS ChemE)	PhD student, Columbia University
20. Vincent Fu (BS ECE)	PhD student, University of Chicago
21. Veejay Parsotan (BS ChemE)	BS at USC
22. Sean Battey(BS ChemE)	BS at USC

Other Past Members:

Visitors:

1. Dr. Chul-ho Lee (Associate Professor, Korea University)	(Jan 2020 – Sep 2020)
2. Dr. Bhagawati Prasad (Assistant Professor, Indian Institute of Science)	(Jun 2022 – Aug 2022)

High School Students:

1. Malcolm Pithwala (2015)	BS at Univ of Minnesota, Twin Cities
2. Matthew Kuner (2016)	BS at Georgia Institute of Technology
3. Adrian Ballard (2016)	BS at Haverford College
4. Yizhi Huang (2017)	BS at Georgia Institute of Technology
5. Shravan Hariharan (2017)	BS at UC San Diego
6. Samantha Noriega (2017)	BS at University of California, Berkeley
7. Oscar Chou (2018)	BS at Northeastern University
8. Derick Tseng (2018)	BS at University of California, Berkeley
9. Elizabeth Kim (2019)	
10. Maanasi Narayan (2020)	BS at University of California, Los Angeles
11. Athalia Meron (2020)	BS at Harvard University
12. Timothy Proctor (2021)	
13. Christian Kwon (2021)	
14. Anahita Lakdawalla (2022)	

NSF-RET Teachers:

Ms. Evanna Thompson, Mr. Rudolfo Edeza, Ms. Pilar Bayani, Ms. Melody Haynes.

STUDENT AWARDS

1. Shanyuan Niu (Past Ph.D. Student)
   a. *William F. Ballhaus, Jr. Prize for Excellence in Graduate Engineering Research* (2019) – The best thesis award given to one PhD student in the USC Viterbi School of Engineering across all the departments in 2019.
   b. *USC PhD Achievement Award* (2019) – One of six students across all schools in USC to receive this best PhD student award in 2019.

c. *Link Energy Fellowship* (2017-19) – One of three students from >150 applicants in the US to receive this fellowship.
d. *Chinese Government Award for Outstanding Self-Finanaced Students Abroad* (2018)
e. *American Physical Society (APS) – Forum on International Physics Distinguished Student Award* (2019)
f. *APS FGSA Travel Award for Excellence in Research* (2019)
g. *APS DCMP Honorable Mention Travel Award* (2019)
h. *APS Ovshinsky Travel Grant Award* (2019)
i. *MFD symposium Best Oral Presentation* (2018)
j. *MFD Best Research Assistant Award* (2017)
k. *MFD symposium poster winner* (2016)

2. Kevin Ye (Past Undergraduate Student)
   a. *Barry Goldwater Fellow* (2017)
   b. *Discovery Scholar* (2017)
   c. *Provost's Undergraduate Research Fellow (*x5*)*
   d. *Rose Hills Foundation Fellow* (2016)
   e. *Poster Award at ACS Southern California Undergraduate Research Conference Spring* (2018)
3. Thomas Orvis (Past Ph.D. Student)
   a. *MFD symposium poster award winner* (Fall 2018)
   b. *MFD symposium oral presentation award winner* (Spring 2020)
   c. *Best Dissertation Award Nominee from Materials Science* (Spring 2021)
4. Yang Liu (Past Ph.D. Student)
   a. *MFD Best Research Assistant Award* (Spring 2019)
5. Huandong Chen (Past Ph.D. Student)
   a. *Best Dissertation Award Nominee from Materials Science* (Spring 2023)
6. Mythili Surendran (Current PhD Student)
   a. *MFD symposium poster award winner* (Spring 2021)
   b. *Oxford PV Prize for Best Contributed Talk on Photovoltaics at Fall European Materials Research Society Meeting 2021.*
   c. *MFD symposium oral presentation – special mention* (Spring 2022)
   d. *WiSE Travel Award* (Spring 2022)
   e. 2023 *Undergraduate Mentoring Award* (Spring 2023).
   f. *AVS Dorothy M. and Earl S. Hoffman Travel Grant* (Fall 2023).
7. Boyang Zhao (Current PhD Student)

   a. *Staib Instruments Best Oral Presentation Award at Materials Research Society Spring Meeting 2023*, San Francisco, CA.

9. Claire Wu (Current PhD Student)
   a. *National Science Foundation Graduate Research Fellowship* (2023-25)

10. Kangmin Lee (Past Undergraduate Student)
    a. *Provost's Fellow*
11. Austin Cunniff (Past Undergraduate Student)
    a. *Provost's Fellow (*x6*)*

12. Rubinder Sekhon (Past Undergraduate Student)
    a. WiSE Fellow
13. Peggy Kindschuh (Past Undergraduate Student)
    a. *MFD symposium undergraduate poster award* (Spring 2022)
14. Miranda Hack (Past Undergraduate Student)
    a. *Provost's Fellow* (Summer 2022)
    b. *MFD symposium undergraduate poster award* (Spring 2022)
15. Vincent Fu (Past Undergraduate Student)
    a. *Provost's Fellow* (Summer 2022)
    b. *USC Viterbi CURVE Fellow* (Fall 2022)

TEACHING

- Spring 2015 – MASC 504 : Diffusion and Phase Equilibria
  Enrollment: 8 Contact hours: 3
- Spring 2016 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 33 (3 in DEN) Contact hours: 3
- Fall 2016 – MASC 599 (now 512) : Thin Film Science and Technology
  (Created a new graduate elective in Materials Science)
  Enrollment: 27 Contact hours: 3
- Fall 2016 – CHE 450 : Sustainable Energy
  (Co-created a new course and undergraduate emphasis in Chemical Engineering with Dr. Ted Lee)
  Enrollment: 12 Contact hours: 3
- Spring 2017 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 37 (5 in DEN) Contact hours: 3
- Fall 2017 – MASC 512 : Thin Film Science and Technology
  Enrollment: 12 Contact hours: 3
- Fall 2017 – CHE 450 : Sustainable Energy
  Enrollment: 31 Contact hours: 3
- Spring 2018 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 17 (3 in DEN) Contact hours: 3
- Fall 2018 – CHE 491 : Nanotechnology Research for Undergraduates
  Enrollment: 2 Contact hours: 2
- Fall 2018 – CHE 391L : Introduction to Nanotechnology Research
  Enrollment: 1 Contact hours: 2
- Fall 2018 – MASC 512 : Thin Film Science and Technology
  Enrollment: 8 Contact hours: 3
- Spring 2019 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 9 (2 in DEN) Contact hours: 3
- Spring 2020 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 43 (3 in DEN) Contact hours: 4
- Fall 2020 – MASC 512 : Thin Film Science and Technology
  Enrollment: 10 Contact hours: 3

- Spring 2021 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 24 (3 in DEN) Contact hours: 4
- Spring 2022 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 19 (2 in DEN) Contact hours: 4
- Spring 2023 – MASC 504 : Diffusion and Phase Equilibria (also DEN)
  Enrollment: 12 Contact hours: 4

MEMBERSHIP

1. MRS – Materials Research Society (2008 – present)
2. APS – American Physical Society (2008 – present)
3. ACerS – American Ceramic Society (2015 – present)
4. AVS – American Vacuum Society (2017 – present)
5. TMS – The Minerals, Metals & Materials Society (2019 – present)

SERVICE

External:

- **Guest Editor**: MRS Advances, Proceedings of the National Academy of Sciences (PNAS) (2023).

- **Editorial Advisory Board:** ACS Applied Electronic Materials (2022 – present)

- **Member,** National Academies of Sciences, Engineering, and Medicine Review Panel for Material Measurement Laboratory, National Institute of Standards and Technology (2023).

- **Symposium Organization:**

  Lead organizer for symposiums at
  1. 2023 Materials Research Society Spring Meeting, San Francisco CA.
  2. 2019 Materials Research Society Fall Meeting, Boston MA.
  3. 2018 ACerS Electronic and Advanced Materials, Orlando FL.
  4. 2017 American Ceramic Society (ACerS) Electronic Materials and Applications, Orlando FL.

  Co-organizer for symposiums at
  1. 2022 Materials Research Society Fall Meeting, Boston MA.

- **Conference Session Chair:**
  1. Materials Research Society Spring Meeting 2021.
  2. ACerS Electronic Materials and Applications 2020
  3. Materials Research Society Fall Meeting 2019
  4. 21st International Conference on Ternary and Multinary Compounds 2018
  5. ACerS Electronic and Advanced Materials 2018
  6. ACerS Electronic Materials and Applications 2017
  7. International Conference on Materials for Advanced Technologies 2017
  8. Materials Research Society – Spring Meeting 2016
  9. Materials Research Society – Spring Meeting 2015
  10. American Physical Society – March meeting 2015

- TMS Functional Materials Division – Committee member (2020 – 2021)

- TMS Functional Materials Division – Awards Committee (2020 – 2021)
- Judge, Intel International Science and Engineering Fair 2017

- **Reviewing Activities** (2010 – present):

Grant Agencies:

National:

1. US National Science Foundation (NSF) (2015-present)
2. US Air Force Office of Scientific Research (AFOSR) (2016-present)
3. The National Aeronautics and Space Administration (2019-present)
4. US Department of Energy (2019-present)
5. American Chemical Society Petroleum Research Fund (ACS PRF) (2017-present)

International

6. Israel PAZY Foundation (2017-present)
7. National Science Center, Poland (2019-present)
8. Dutch Research Council (NWO) – Veni grants (2020-present)
9. Israeli Ministry of Science and Technology Grants (2020-present)

Journals: Several journals such as **Nature Nanotechnology, Science Advances, Nature Communications, Advanced Materials, Physical Review Letters, Nano Letters, and ACS Nano**.

User Proposals at National Facilities: Stanford Synchrotron Radiation Lightsource - SSRL (2019 - present).

Book Reviews: Elsevier (2017 – present).

Internal:

University level:

- Co-Director, Core Center for Excellence in Nano Imaging (CNI) (2022 – present)
- Member of Advisory Board, Core Center for Excellence in Nano Imaging (CNI) (2020-present)
- USC Chemical Safety Committee (2015-23)
- Faculty Advisor, USC Materials Research Society Chapter (2017 – present)
- Office of Research Internal Proposal Reviewer (2020 - present)
- Undergraduate Renaissance Scholars Prize Committee (2020 - 22)

School level:

- Viterbi School of Engineering Research Committee (2018 - 21)
- Viterbi Discovery Scholars Prize Committee (2020)
- Panel Member, Academic Career Mentoring Panel (Spring 2019)
- Judge, Undergraduate Symposium (2017)
- Collaborated with USC STEM Center (formerly USC VAST) to organize high student labs (Spring 2016,17) visit to Core Center for Excellence in NanoImaging : CNI (formerly CEMMA). The students were from Carson High School, a predominantly minority serving high school in South Los Angeles area.

Department level:

- Member, ad-hoc Tenure and Promotion committees (2022 – present)
- Member, Annual Faculty Review committee (2023 – present)
- Member, Degree Options Revision Committee (2022)
- Member, Faculty Search Committee (2021 – 22)
- Member, Awards Committee (2020 – present)
- Member, Research Restart Committee (2020 – 21)
- Faculty Coordinator, Departmental Seminar Series Organization Committee (2015-20)
- Member, Graduate Student Symposium Organization Committee (2015-16)
- Member, Graduate Recruitment Committee (2015-19)
- Member, Graduate Curriculum Committee (2017-18)
- Faculty Search Committee (Research Assistant Professor) (2020)
- Faculty Appointment Committee (Courtesy Appointment) (2019)

Exam Committees: (Che = Chemistry; ChemE = Chemical Engineering; MASC = Materials Science; EE-EP = Electrical Engineering – Electrophysics; ECE-EP = Electrical and Computer Engineering – Electrophysics;)

- External Thesis Committee Member – School of Materials Science and Engineering, University of New South Wales, Australia (2017), Department of Physics and Astronomy, University of Waterloo, Canada (2021).

- **Screening Exam**
  - Materials Science (2015-19)
  - Fa 2015: Andrew Clough (Che), Abbey Neer (Che)
  - Sp 2016: Dmitri Svetlov (Che), Joel Patrow (Che), Laura Estergreen (Che)
  - Fa 2017: Savannah Kapper (Che), JoAnna Milam-Guerrero (Che)
  - Sp 2018: Nicholas Bashian (Che), Keying Chen (Che)
  - Sp 2019: Anuj Pennathur (Che), Matthew Voegtle (Che), Liqui Yang (ChemE)
  - Sp 2020: Sevan Menachekanian (Che)
  - Fa 2020: Christina Trang (Che)
  - Fa 2021: Sara Bollstetter (Che)

- **Qualifying Exam**
  - Sp 2015: Shima Haghighat (MASC), Michele Lee (MASC)
  - Fa 2015: Lee Hamill (MASC), Theresa Juarez (MASC), Andrew Clough (Che)
  - Sp 2016: Alireza Divsalar (ChemE), Abbey Neer (Che), Nathan Heckman (AME)
  - Fa 2016: Nirakar Poudel (EE-EP), Laura Estergreen (Che), Joel Patrow (Che)
  - Sp 2017: Vinh Diep (MASC), Hyungwoo Choi (ChemE), Rebecca Wilson (ChemE), Fatemeh Rezaeifar (EE-EP), Niki Bayat (ChemE), Shanyuan Niu (MASC)
  - Fa 2017: Prathamesh Karandikar (ChemE), Chunyang Sheng (MASC), Shiyu Su (EE-EP), Thomas Saal (Che)
  - Sp 2018: Savannah Kapper (Che), Mark De Luna (ChemE), JoAnna Milam-Guerrero (Che), Debarghya Sarkar (EE-EP), Andre Kovach (ChemE), Fanqi Wu (MASC), Huan Zhao (EE-EP), Haneol Lim (MASC)
  - Fa 2018: Nicholas Bashian (Che), Keying Chen (Che), Nareh Movsesian (ChemE), Xiaodong Yan (EE-EP)

- Sp 2019: Aravind Krishnan (EE-EP), Yang Liu (MASC), Pingyue Song (EE-EP), Ahmed Morsy (EE-EP), Sarah Schechter (ChemE), Huandong Chen (MASC), Rene Zeto (ChemE), Thomas Orvis (MASC), Aoyang Zhang (EE-EP)
- Fa 2019: Moon Chul Jung (MASC), Advaith Murali (MASC)
- Sp 2020: Matthew Voegtle (Che), Anuj Pennathur (Che), David Bender (ChemE), Daniel Zebrine (MASC)
- Fa 2020: Bryan Nguyen (ChemE), Yu Wang (MASC), Ankit Mishra (ChemE)
- Sp 2021: Jun Tao (ECE), Heifei Liu (ECE), Suyue Yuan (MASC), Jie Ma (MASC)
- Fa 2021: Ahmed El Baradei (MASC), Hung-Yu Chen (ECE), Kylie Trettner (ChemE)
- Sp 2022: Gemma Goh (Che), Mythili Surendran (MASC), Nicholas Humphrey (MASC), Boyang Zhao (MASC), Lucas Jordao (MASC), Yasaman Moradi (ChemE), Qi Huang (MASC), Majed Madani (ChemE), Daniel Goodelman (AME), Ruru Ma (MASC), Jiahui Ma (ECE-EP), Selin Bac Bilgi (ChemE), Nan Wang (MASC), Liqiu Yang (ChemE), Zhonghao Du (ECE)
- Fa 2022: Max Lien (ECE-EP)
- Sp 2023: Indu Aravind (Physics)
- Fa 2023: Danielle White (MASC), Harish Kumarasubramanian (MASC), Shantanu Singh (MASC)

- **Thesis Defense**
  - Sp 2015: Mikhail Polyakov (AME)
  - Sp 2016: Rohan Dhall (EE-EP) and Leonardo Velasco Estrada (AME)
  - Fa 2016: Kunal Dutta (EE-EP), Yoshitake Nakajima (EE-EP), Alireza Imani (EE-EP)
  - Sp 2017: Michele Lee (MASC), Shima Haghighat (MASC)
  - Fa 2017: Lee Hamill (MASC)
  - Sp 2018: Vinh Diep (MASC), Abbey Neer (Che)
  - Fa 2018: Bethany Seckman (MS – Che), Victoria Sun (ChemE), Fatemeh Rezaeifar(EE-EP)
  - Sp 2019: Shanyuan Niu (MASC), Sebastian Riano (MASC), Hyungwoo Choi (ChemE), Joel Patrow (Che), Jaewon Nam (EE-EP), Andrew Clough (Che), Huan Zhou (EE-EP), Mark de Luna (ChemE)
  - Fa 2019: Fanqi Wu (MASC), Aravind Krishnan (EE-EP), Mitchell Dreiske (EE-EP),
  - Sp 2020: Sarah Schechter (ChemE), Debarghya Sarkar (EE-EP), Ahmed Morsy (EE-EP),
  - Fa 2020: Aoyang Zhang (ECE-EP), Xiaodong Yan (ECE-EP), Nicholas Bashian (Che), Laura Estergreen (Che), JoAnna Milam-Guerrero (Che), Pingyue Song (ECE-EP)
  - Sp 2021: Andre Kovach (ChemE), Rene Zeto (ChemE), Thomas Orvis (MASC), David Bender (ChemE)
  - Fa 2021: Keying Chen (Che), Savannah Kapper (Che), Moon Chul Jung (MASC), Alina Garcia Taormina (MASC)
  - Sp 2022: Yu Wang (MASC), Masashi Yamagata (ECE-EP), Yang Liu (MASC), Jun Tao (ECE), Matthew Voegtle (Che), Vicente Galvan (Che), Rodrigo Elizalde Segovia (Che), Daniel Zebrine (MASC), Advaith Murali (Che).
  - Sp 2023: Huandong Chen (MASC), Ragib Ahsan (ECE-EP), Hung-Yu Chen (ECE-EP)