SANDHYA SUSARLA

Assistant Professor
School of Engineering in Matter, Transport, and Energy (SEMTE), Arizona State University (ASU)

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RESEARCH INTERESTS

Quantum materials, cryo-electron microscopy for materials, quantitative scanning transmission electron microscopy (STEM), Electron energy loss spectroscopy (EELS) experiments and simulations, Cathodoluminescence (CL), 2D materials, perovskite oxides.

EDUCATION AND PAST EMPLOYMENT

Postdoctoral Scholar	National Center for Electron Microscopy (NCEM) Mentors: *Ramamoorthy Ramesh, Dr. Peter Ercius*	09/2019-08/2022
Chateaubriand Fellow	STEM group, CNRS, France Host: *Odilé Stephan*	08/2018-04/2019
Ph.D.	Rice University, Materials Science & Nano-Engineering Dissertation: "Multicomponent Chalcogens" Advisor: *Pulickel M. Ajayan*	08/2015-07/2019
B. Tech	Indian Institute of Technology (Varanasi) Major: *Metallurgical Engineering*	2011-2015

HONORS AND AWARDS

Microscopy and Microanalysis Postdoctoral Travel Award	2022
APS DMP Postdoctoral Travel Award	2022
Chateaubriand Fellow	2018-19
Smalley-Curl SCI-STAR Fellow	2018
Graduate Teaching Awardee	2017
Indian Academy of Science Undergraduate Fellow	2014

PROFESSIONAL & LEADERSHIP SERVICE

Teaching:
Fall 2022: MSE552: Transmission electron microscopy I (40 graduate students both online and in-person)

Mentorship:
PhDs (2) *:* Patrick Hays (2022-present), Mahir Manna (2023-present)
Masters (3) *:* Surya Prakash Reddy (2022-present),, Sriram Sankar (2022-present),, Kshitish Raghavedra Mujumdar (2023-present),
Undergraduates **(1):** Badar Aladawi (2023-present)

Service:
2018-Present, Journal Reviewer: ACS Nano, Nano Letters, Carbon, Nature Communications, Applied Physics Letters, npj Computational Materials, Journal of Applied Physics, Physical Review Letters, ACS Applied Nano Materials
2022- Workshop participant DOE-BES Electron microscopy, NSF Laboratory for the Future

2022-Present, ASU, (SEMTE)-MSE UG Curriculum Committee member
2022-Present, Session chair, APS March Meeting, Chicago, M&M, Portland, Spence Symposium, Phoenix
2022-Present, Symposium Organizer, Materials Research Society (MRS) Fall meeting 2023, ASU Winter School, 2022, Materials Research Society (MRS) Spring meeting 2024, Microscopy and Microanalysis, 2024
2022-Present, Proposal Reviewer board, Molecular Foundry (MF), Center for Nanophase Sciences (CNMS)

STUDENTS AWARDS

Surya Prakash Reddy: MORE research award

PUBLICATIONS (HTTPS://BIT.LY/2TLUMDC)

After ASU (Students from PI group underline)
Under review/preparation

1. **S. Susarla**, S. L. Hsu, P. Behera, F. G.-Ortiz, B. Savitzky, S. Das, J. Junquera, P. Ercius, C. Ophus, and R. Ramesh, *Probing three-dimensional chiral domain walls in polar vortices* **(under review**).

2. E. Lupi, R. B. Wexler, D. Meyers, A. Zahradnik, Y. Jiang, **S. Susarla**, R. Ramesh, A. M. Rappe, and L. W. Martin, *Artificial Relaxor Behavior in (BaTiO₃)n/(SrTiO₃)n Superlattices*. (**under review**)

3. X. Huang, X. Chen, H. Zhang, J. Mangeri, **S. Susarla**, R. Jain, C. Klewe, T. Wang, L. Caretta, I. Harris, E. Parsonnet, R. Chen, H. Pan, J. Yin, P. Meisenheimer, Y.-L. Huang, P. Shafer, Z. Qiu, D. Vasudevan, J. Iniguez, S. Salahuddin, L. W. Martin, D. C. Ralph, Z. Yao, and R. Ramesh*, Manipulating chiral spin transport via ferroelectric polarization* (**under preparation**)

4. A. Edgeton, I. Harris, N. Campbell, Y. Chai, M. Mazur, G. Gurung, X. Huang, **S. Susarla**, E. Tsymbal, D. Ralph, T. Nan, M. Rzchowski, R. Ramesh, and C.-B. Eom, *Giant room-temperature spin-orbit torque in a bismuthate superconductor*, (**under review**)

2023

1. J. Martis*, **S. Susarla***, A. Rayabharam, C. Su, T. Paule, C. Huff, X. Xu, H. Li, M. Jaikissoon, V. Chen, E. Pop, A. Zettl, N. Aluru, R. Ramesh, P. Ercius, A. Majumdar, *Imaging the electron charge density in transition metal dichalcogenides at Ångstrom scale*, **Nature Communications**, (Just accepted)

2. J. Kopaczek, K. Yumigeta, A. Ibrahim, M. Y Sayyad, S. Sinha, R. Sailus, P. Hays, S. T. R. Moosavy, **S. Susarla**, C. Ataca, R. Kudrawiec, Sefaattin Tongay, *Experimental and Theoretical Studies of the Surface Oxidation Process of Rare-Earth Tritellurides*, **Advanced Electronic Materials**, 2023

3. P. Behera , E. Parsonnet , F. G.-Ortiz , V. Srikrishna , P. Meisenheimer , **S. Susarla** , P. Kavle , L. Caretta , Y. Wu , Z. Tian , A. Fernandez , L. W. Martin , S. Das , J. Junquera , Z. Hong, R. Ramesh *Metastable Switching Events in Polar Vortex Arrays*, **Advanced Materials**, 2023 (*Just accepted*)

2022

4. **S. Susarla,** M. H. Naik, Daria D. Blach, J. Carlstroem, T. Taniguchi, K. Watanabe, Libai Huang, Felipe H. da Jornada, R. Ramesh, Steven G. Louie, P. Ercius, and A. Raja, *Hyperspectral imaging of excitons within a moiré unit-cell with a sub-nanometer electron probe*, **Science**, 378, 6625,1235-1239

Before ASU

5. S. Das, V. V. Laguta, K. Inzani, W. Huang, J. Liu, R. Chatterjee, M. R. McCarter**, S. Susarla**, A. Ardavan, J. Junquera, S. M. Griffin, and R. Ramesh, *Inherent spin–polarization control in a magnetoelectric vortex*, **Nano letters**, 22, 10, 3976–3982, 2022

6. Y. Jiang, E. Parsonnet, A. Qualls, W. Zhao, **S. Susarla**, D. Pesquera, A. Dasgupta, M. Acharya, T. Gosavi, Chia-Ching Lin, D. E. Nikonov, H. Li, I. A. Young, R. Ramesh, and L. W. Martin; *Enabling ultralow voltage switching and function in ferroelectrics – Towards "intrinsic" properties in* $BaTiO_3$. **Nature Materials**, 21, 779-785, 2022

7. H. Zhang, D. Raftrey, Y.T. Chan, Y.T. Shao, R. Chen, X. Chen, X. Huang, J. T. Reichanadter, K. Dong, **S. Susarla**, L. Caretta, Z. Chen, J. Yao, P. Fischer, J. B. Neaton, W. Wu, D. A. Muller, R. J. Birgeneau, and R. Ramesh, *Room temperature Skyrmion lattice in a layered magnet* $(Fe_{0.5}Co_{0.5})_5GeTe_2$, **Science Advances**, 8, 12, eabm7103 2022 (**Highlighted by Nature Electronics**)

8. K. T. Kim, M. R. McCarter, V. Stoica, S. Das, C. Klewe, E. Donoway, D. Burn, P. Shafer, F. Rodolakis, M. Gonçalves, F. G.-Ortiz, J. Íñiguez, P. G.-Fernandez, J. Junquera, **S. Susarla**, S. Lovesey, G. V. Laan, S. Y. Park, L. Martin, J. Freeland, R. Ramesh, and D. R. Lee, *Chiral structures of electric polarization vectors quantified by X-ray resonant scattering,* **Nature Communications,** 13, 1769, 2022

9. H. Zhang, Y.T. Shao, R. Chen, X. Chen, **S. Susarla**, J. Reichanadter, L. Caretta, X. Huang, N. S. Settineri, Z. Chen, J. Zhou, E. B.-Courchesne, P. Ercius, J. Yao, J. Neaton, D. A. Muller, R. Birgeneau, and R. Ramesh, *A room temperature polar ferromagnetic metal*, **Physical Review Materials,** 6, 044403, 2022 (**Highlighted by Physics Synopsis**)

10. X. Chen, Y.T. Shao, R. Chen, **S. Susarla**, T. Hogan, Y. He, H. Zhang, S. Wang, J. Yao, P. Ercius, D. A. Muller, R. Ramesh, and R. J. Birgeneau, *Pervasive beyond room-temperature ferromagnetism in a doped van der Waals magnet*. **Physical Review Letters,** 128, 217203, 2022

11. L. M. Sassi, A. Krishnamoorthy, J. A. Hachtel, **S. Susarla**, A. Apte, S. Castro-Pardo, A. Ajnsztajn, R. Vajtai, J. C. Idrobo, A. B. Puthirath, P. Vashishta, C. S. Tiwary, and P. M. Ajayan, *Low Temperature CVD Growth of* WSe_2 *Enabled by Moisture-Assisted Defects in the Precursor Powder*, **2D Materials,** 2022, 9, 4, 045026

12. P. Behera, M. A. May, F. G. Ortiz, **S. Susarla**, S. Das, C. T. Nelson, L. Caretta, S.L. Hsu, M. R. McCarter, B. H. Savitzky, E. S. Barnard, A. Raja, Z. Hong, P. G. Fernandez, S. W. Lovesey, G. V. Laan, C. Ophus, L. W. Martin, J. Junquera, M. B. Raschke, R. Ramesh, *Electric-Field Control of Chirality*, **Science Advances**, 8,1, eabj8030, 2022 (**Highlighted as feature article**)

2021

13. **S. Susarla**, P. G. Fernández, C. Ophus, P. A. Puente, S. Das, P. Ercius, L.W. Martin, R. Ramesh, J. Junquera, *Atomic scale crystal field mapping of polar vortices in oxide superlattices***,** **Nature Communications**, 12, 1-7, 2021 (**Highlighted as feature article**)

14. **S. Susarla**, L. M. Sassi, A. Zobelli, Steffi Y. Woo, Luiz H. G. Tizei, O. Stéphan, P. M. Ajayan, *Mapping modified electronic levels in the moiré patterns in* MoS_2/WSe_2 *using low-loss EELS*, **Nano Letters**, 21,9, 2021.

15. **S. Susarla**, G. Chilkoor, Y. Cui, T. Arif, T. Tsafack, A. Puthirath, P. M Sudeep, J. R Kalimuthu, A. Hassan, S. C. Pardo, M. Barnes, R. Verduzco, T. Filleter, N. Koratkar, V. Gadhamshetty, M. M Rahman, P. M Ajayan, *Corrosion Resistance of Sulfur-Selenium Alloy Coatings***, Advanced Materials**, 33, 51, 2021

16. X. Huang, S. Sayed, J. Mittelstaedt, **S. Susarla**, S. Karimeddiny, L. Caretta, H. Zhang, V. A. Stoica, T. Gosavi, F. Mahfouzi, Q. Sun, P. Ercius, N. Kioussis, S. Salahuddin, D. C. Ralph, R. Ramesh, *Novel Spin–Orbit Torque Generation at Room Temperature in an All-Oxide Epitaxial $La_{0.7}Sr_{0.3}MnO_3/SrIrO_3$ system*, **Advanced Materials**, 33, 2008269, 2021.

17. S. Roy, X. Zhang, A. B. Puthirath, A. K. Meiyazhagan, S. Bhattacharyya, M. M. Rahman, G. Babu, **S. Susarla**, M. K. Tran, S. K.Saju, L. Sassi, J. Lai, O. Sahin, S. M. Sajadi, B. Dharmarajan, R. M. Yadav, N. Chakingal, A. Baburaj, D. Salpekar, X. Shuai, A. Adumbumkulath, T. Prasankumar, V. V. J. Harikrishnan, V. Ojha, H. Kannan, A. Khater, MASR Saadi, Z. Zhu, S. A. Iyengar, S. Castro, J. Xu, P.A.S. Autreto, E. F. Oliveira, G. Gao, J. T.-Tijerina, S. Arepalli, R. Vajtai, P. M Ajayan, *Structure, Properties and Applications of two-dimensional Hexagonal Boron Nitride*, **Advanced Materials**, 33, 2101589, 2022.

2020

18. A. Apte, K. Mozaffari, F. S. Samghabadi, J. A Hachtel, L. Chang, **S. Susarla**, J. C. Idrobo, D. C. Moore, N. R. Glavin, D. Litvinov, P. Sharma, A. B Puthirath, P. M Ajayan, *2D Electrets of Ultrathin MoO_2 with Apparent Piezoelectricity*, **Advanced Materials**, 32,24,2000006,2020.

2019

19. **S. Susarla**, T.Tsafack, P.S Owuor, A.B. Puthirath, J.A. Hachtel, G. Babu, A. Apte, B.I. Jawdat, M.S. Hilario, A. Lerma, H. A. Calderon, F. C. R. Hernandez, D. W. Tam, T. Li, A. R. Lupini, J. C. Idrobo, J. Lou, B. Wei, P. Dai, C. S. Tiwary, P. M Ajayan; *High-K dielectric sulfur-selenium alloys***, Science advances**, 5,5, 2019.

20. **S. Susarla**, A. B. Puthirath, T. Tsafack, D. Salpekar, G. Babu, P. M Ajayan, *Atomic-Level Alloying of Sulfur and Selenium for Advanced Lithium Batteries*, **ACS applied materials & interfaces**,12,1, 2019

21. **S. Susarla**, P. Manimunda, Y. M. Jaques, J. A. Hachtel, J.C. Idrobo, S. A. S. Asif, D.S. Galvão, C.S. Tiwary, P.M. Ajayan, *Strain induced structural deformation study of two dimensional $Mo_xW_{(1-x)}S_2$*, **Advanced Materials Interfaces**, 6, 1801262, 2019.

22. A. Apte, A. Krishnamoorthy, J.A. Hachtel, **S. Susarla**, J. Yoon, L.M. Sassi, P.Bharadwaj, J.M. Tour, J.C. Idrobo, R. K. Kalia, A. Nakano, P. Vashishta, C. S. Tiwary, Pulickel M Ajayan, *Two-Dimensional Lateral Epitaxy of 2H ($MoSe_2$)–1T'($ReSe_2$) Phases*, **Nano Letters**, 19,9, 6338, 2019.

23. S. Ozden, S. Bawari, S. Vinod, U. Martinez, **S. Susarla**, C. Narvaez, J. Joyner, C.S. Tiwary, T.N. Narayanan, P.M. Ajayan; *Interface and defect engineering of hybrid nanostructures toward an efficient HER catalyst*, **Nanoscale**,11,26, 12489, 2019.

24. M. M Rahman, A. B Puthirath, A. Adumbumkulath, T. Tsafack, H. Robatjazi, M. Barnes, Z. Wang, S. Kommandur, **S. Susarla**, S. M. Sajadi, D. Salpekar, F. Yuan, G. Babu, K. Nomoto, SM Islam, R. Verduzco, S. K Yee, H. G. Xing, P. M. Ajayan, *Fiber Reinforced Layered Dielectric Nanocomposite*, **Advanced Functional Materials**, 29,28,1900056,2019.

2018

25. **S. Susarla**, P. Manimunda, Y. M. Jaques, J.A. Hachtel, J. C. Idrobo, A. Syed, A. Syed, D.S. Galvão, C.S. Tiwary, P.M. Ajayan, *Deformation mechanisms of vertically stacked WS_2/MoS_2 Heterostructures: The role of interfaces*, **ACS Nano**, 12, 4, 4036-4044, 2018.

26. **S. Susarla**, J. A. Hachtel, X. Yang, A. Kutana, A. Apte, Z. Jin, R. Vajtai, J.C. Idrobo, J. Lou, B.I. Yakobson, C.S. Tiwary, and P.M. Ajayan, *Thermally induced two-dimensional alloy-heterostructure transformation in quaternary alloys*, **Advanced Materials**, 30, 45, 1804218, 2018.

27. G. Zhou, P. Rajak, **S. Susarla**, P.M. Ajayan, R.K. Kalia, A. Nakano, P. Vashishta, *Molecular simulation of MoS_2 exfoliation*, **Scientific Reports**, 8, 1, 16761, 2018.

28. P.S. Owuor, T. Tsafack, S. Schara, H.Y. Hwang, S. Jung, R. V. Salvatierra, T. Li, **S. Susarla**, M. Ren, B. Wei, C.S. Tiwary, P.M. Ajayan *Achieving Self-Stiffening and Laser Healing by Interconnecting Graphene Oxide Sheets with Amine-Functionalized Ovalbumin*, **Advanced Materials Interfaces**, 5,20, 1800932, 2018.

29. P. Owuor, T. Tsafack, H. Y. Hwang, M. Sajadi, S. Jung, T. Li, **S. Susarla**, B. Wei, R. Vajtai, J. Lou, S. Bhowmick, C. S. Tiwary, and P. M. Ajayan, *Interconnecting Bone Nanoparticles by Ovalbumin Molecules to Build a Three-Dimensional Low-Density and Tough Material*, **Applied Materials and Interfaces**, 10, 41757−41762, 2018

30. A. Apte, A. Krishnamoorthy, J.A. Hachtel, **S. Susarla**, J.C. Idrobo, A. Nakano, R.K. Kalia, P. Vashishta, C.S. Tiwary, P.M. Ajayan, *Telluride-based atomically thin layers of ternary 2D transition metal dichalcogenide alloys*, **Chemistry of Materials**,30, 20, 7762-7268, 2018.

31. A.K. Meiyazhagan, A. Aliyan, A. Ayyappan, I. Moreno-Gonzalez, **S. Susarla**, S. Yazdi, K. Cuanalo-Contreras, V.N. Khabashesku, R. Vajtai, A.A.Marti, P.M. Ajayan, *Soft Lithographic Patterning of Luminescent Carbon Nanodots Derived from Collagen Waste*, **ACS Applied Materials & Interfaces**, 10, 42, 36275-36383, 2018.

32. K. Ababtain, G. Babu, **S. Susarla**, H. Gullapalli, N. Masurkar, P.M. Ajayan, L.M.R. Arava, *Porous graphene current collectors filled with silicon as high-performance lithium battery anode*, **Materials Research Express**, 5,1,14004, 2018.

2017

33. **S. Susarla**, A. Kutana, J. A. Hachtel, V. Kochat, A. Apte, R. Vajtai, J.C. Idrobo, B. I. Yakobson, C.S. Tiwary, P.M. Ajayan, *Quaternary two-dimensional (2D) transition metal dichalcogenides (TMDs) with tunable bandgap*, **Advanced Materials**, 29, 35, 1702457, 2017.

34. **S. Susarla**, V. Kochat, A. Kutana, J. A. Hachtel, J.C. Idrobo, R. Vajtai, B. I. Yakobson, C.S. Tiwary, P.M. Ajayan, *Phase Segregation Behavior of Two-Dimensional Transition Metal Dichalcogenide Binary Alloys Induced by Dissimilar Substitution*, **Chemistry of Materials**, 29, 17, 7431-7439, 2017.

35. P. Manimunda,*; Y. Nakanishi, Y.M. Jaques,*; **S. Susarla***; C.F. Woellner, S. Bhowmick, S.A.S Asif,; D.S. Galvao, C.S. Tiwary, P.M. Ajayan, *Nanoscale deformation and friction characteristics of atomically thin WSe_2 and heterostructure using nanoscratch and Raman spectroscopy*; **2D Materials**, 4,4,45005, 2017 (* Equal contribution).

36. P.S. Owuor, O.K. Park, C.F. Woellner, A.S. Jalilov, **S. Susarla**, J. Joyner, S. Ozden, L.X. Duy, S.R. Villegas, R. Vajtai, J. Lou, P.M. Ajayan, *Lightweight hexagonal boron nitride foam for CO_2 absorption*; **ACS nano**, 11,9, 8944-8952, 2017.

37. V. Kochat, A. Apte, J.A. Hachtel, H. Kumazoe, A. Krishnamoorthy, **S. Susarla**, J.C. Idrobo, F. Shimojo, P. Vashishta, R. Kalia, N. Aiichiro, C.S Tiwary , P.M Ajayan, *Re Doping in 2D Transition*

Metal Dichalcogenides as a New Route to Tailor Structural Phases and Induced Magnetism; **Advanced Materials**, 29,43,1703754, 2017.

Conference Papers

1. Y.T. Shao, H. Zhang, R. Chen, X. Chen, **S. Susarla**, J. T Reichanadter, L. Caretta, X. Huang, N. S Settineri, Z. Chen, J. Zhou, E. B.-Courchesne, P. Ercius, J. Yao, J. B Neaton, R. J Birgeneau, R. Ramesh, and D. A Muller *Room Temperature Néel-type Skyrmions in a van der Waals Ferromagnet Revealed by Lorentz 4D-STEM*, **Microscopy and Microanalysis**, 28, S1, 1710-1712, 2022

2. R. Yalisove, **S.Susarla**, H. Zhang, R. Chen, X. Chen, R. J Birgeneau, J. Yao, R. Ramesh, and M. Scott *Unravelling Temperature-Dependent Ordered Skyrmion Phases in Magnetic Layered Materials using Lorentz transmission Electron Microscopy*, **Microscopy and Microanalysis**, 28, S1, 1706-1708, 2022

3. **S. Susarla**, S.L. Hsu, P. Behera, B. Savitzky, S. Das, P. Ercius, C. Ophus, and R. Ramesh, *Probing Three-dimensional Chiral Domain Walls in Polar Vortices*, **Microscopy and Microanalysis**, 28, S1, 1770-1771, 2022

4. **S. Susarla**, P. G.-Fernández, C. Ophus, S. Das, P. A.-Puente, M. McCarter, P. Ercius, L. W Martin, R. Ramesh, J. Junquera, *Atomic Scale Crystal Field Mapping of Polar Vortices in Oxide Superlattices*, **Microscopy and Microanalysis**, 28, S1, 2590-2592, 2022

5. **S. Susarla**, X. Huang, S. Sayed, L. Caretta, H. Zhang, S. Salahuddin, P. Ercius, R. Ramesh, *Atomic scale understanding of the electronic structure of 5d-3d perovskite oxide heterostructures using STEM-EELS*, **Microscopy and Microanalysis**, 27, S1, 356-358, 2021.

6. **S. Susarla**, S. Das, W. Huang, C. Ophus, P. Ercius and R. Ramesh, *Atomic Resolution Crystal Field Splitting Mapping in Polar Vortices Oxide Superlattices*, **Microscopy and Microanalysis**, 26, S2, 3178-3180, 2020.

7. **S. Susarla**, L. H. G. Tizei, S. Y Woo, A. Zobelli, O. Stephan, and P. M Ajayan, *Low Loss EELS of Lateral MoS_2/WS_2 Heterostructures*, **Microscopy and Microanalysis**, 25, S2, 640-641, 2019.

8. Y. M. Jaques, P. Manimunda, Y. Nakanishi, **S. Susarla**, C.F. Woellner, S. Bhowmick, S.A.S. Asif, D.S. Galvão, Tiwary, C.S. Tiwary and P.M. Ajayan *Differences in the Mechanical Properties of Monolayer and Multilayer $WSe_2/MoSe_2$*, **MRS Advances**, 3, 7, 373-378, 2018.

9. J. A Hachtel, **S. Susarla**, V. Kochat, C. Tiwary, P. M. Ajayan, and J. C. Idrobo, *Directly Identifying Phase Segregation in 2D Quaternary Alloys*, **Microscopy and Microanalysis**, 27, S1, 1438-1439, 2017.

PRESENTATIONS & INVITED LECTURES

Invited talk (PI: Susarla)

1. Microscopy and Microanalysis, Minneapolis, Minnesota 2023, Cryogenic electron microscopy challenges to image the nanoscale exciton density of states, July 27, 2023

2. Materials Research Society, Spring Meeting, San Fransisco, 2023, Imaging excitons in semi-conducting two-dimensional heterostructures., April 12, 2023

3. Lawrence Symposium, Arizona State University, Tempe, USA, Understanding structural correlations in

quantum materials, Jan 5, 2023

4. Gatan Webinar, USA, Continuum with Direct Detection, Understanding electronic correlations in quantum materials (online seminar for a worldwide audience)

5. Spence Symposium, Arizona State University, Tempe, USA, Understanding structural correlations in quantum materials, Oct 11-13, 2022

6. Molecular Foundry, Annual User Meeting, Berkeley, California, USA, Aug 18-19, 2022
Real space imaging of moiré excitons in transition metal dichalogenides.

7. Ferroelectric Young Investigators in ISAF-ECAPD-PFM 2022, Tours, France, June 27-July 1, 2022
Understanding atomic scale electronic and physical properties in polar topologies in oxide superlattices

8. Materials Research Society (MRS), Spring Meeting, Honolulu, Hawaii, USA May 8-13, 2022
Understanding Atomic Scale Electronic and Physical Properties in Polar Topologies

9. Majumdar Group meeting, Stanford University, Palo Alto, California, April 01, 2022
Understanding electronic correlations in quantum materials

10. Materials Science Seminar, University of Illinois, Chicago, Illinois, April 6, 2022
Understanding electronic correlations in quantum materials

11. Materials Science Seminar, Arizona State University, Phoenix, March 03, 2022
Understanding electronic correlations in quantum materials

12. Materials Science Seminar, University of Pennsylvania, Philadelphia, February 23, 2022
Understanding electronic correlations in quantum materials

13. Condensed Matter Physics Seminar, Brookhaven National Laboratory (BNL), Upton, January 10, 2022
Understanding electronic correlations in quantum materials

14. Materials Science Seminar, Ohio State University, Columbus, Ohio, November 3, 2021
Understanding electronic correlations in quantum materials

15. Nano seminar, University of California, Berkeley, California, September 24, 2021
Measuring electronic correlations in quantum materials

16. Microscopy seminar, Oak Ridge National Laboratory (ORNL), Knoxville, Tennessee, June 11, 2021
Measuring electronic correlations in quantum materials

Contributed talk (PI: Susarla)

1. Microscopy and Microanalysis, 2022, Portland, Oregon, 2022
Atomic scale crystal field mapping of polar vortices in oxide superlattices

2. Microscopy and Microanalysis, 2022, Portland, Oregon, 2022
Probing three-dimensional chiral domain walls in polar vortices

3. Materials Research Society, Fall Meeting Virtual Meeting, 2021,
Three-dimensional mapping of chiral domain walls using 4D-STEM

4. Materials Research Society, Virtual Spring Meeting, 2021,
   Atomic scale crystal field splitting mapping in polar vortices oxide superlattices

5. Microscopy and Microanalysis, Virtual Meeting, 2020,
   Atomic resolution crystal field splitting mapping in polar vortices oxide superlattices

6. Microscopy and Microanalysis, Portland, 2019,
   Low Loss EELS of Lateral MoS_2/WS_2 heterostructures.

7. MRS Spring Meeting and Exhibit, 2019,
   Low loss EELS of lateral confined MoS_2/WS_2 heterostructures.

8. MRS Spring Meeting and Exhibit 2022, (upcoming)
   Visualizing Moiré Excitons in WS_2/WSe_2 Heterostructures Using Low-Loss EELS.

9. APS March Meeting, March 15-19, 2022
   Nanoscale Imaging of moiré excitons in WS_2/WSe_2 heterostructures using low-loss EELS.

10. Materials today: Materials Science for next two decades, Rice University, Houston, Texas, 2018
    Quaternary transition metal dichalcogenide alloys with tunable band gap

11. SCI-Transdisciplinary Symposium, 2018
    Synthesis of Two- dimensional Quaternary alloys

12. American Physical Society March Meeting, March 8, 2018
    Quaternary two-dimensional transition metal dichalcogenide alloys,

13. American Physical Society March Meeting, March 9, 2017
    Structural phase transition and magnetic behavior in two-dimensional rhenium-doped molybdenum diselenide

14. Microscopy and Microanalysis, July 2017
    Directly Identifying Phase Segregation in 2D Quaternary Alloys

15. American Physical Society March Meeting, March 8, 2017
    Quaternary two-dimensional transition metal dichalcogenide alloys,

Contributed talk and poster (Student from group)

1. **Poster:** Analysis of Vibrational EELS Datasets to Unravel the Nanoscale Ferroelectric-Ferroelastic Coupling in Oxides: ***Surya Prakash Reddy et. al.***, MORE symposium, 2023

2. **Poster:** Understanding atomic scale Rhenium distribution in monolayer Molybdenum Disulfide: ***Patrick Hays et. al.***,, Microscopy and Microanalysis, Minneapolis, Minnesota 2023

3. **Poster:** Spatially resolved moiré excitons fine structure using cryogenic low-loss EELS: ***Sriram Sankar et. al.***,, Microscopy and Microanalysis, Minneapolis, Minnesota 2023