

Academic Appointments and Professional Experience

01/2013-07/2014	Postdoctoral fellow, School of Engineering and Applied Sciences, Harvard University
08/2014-06/2019	Assistant Professor, Materials Science and Engineering, Rensselaer Polytechnic Institute
07/2019-present	Associate Professor, Materials Science and Engineering, Rensselaer Polytechnic Institute

Education

Xi'an Jiaotong University, Xi'an, Shaanxi, China, 710049	Materials Science & Engineering	B.S.	2006
University of Missouri at Columbia, Columbia, MO, USA, 65211	Mechanical Engineering	M.S.	2008
University of Wisconsin at Madison, Madison, WI, USA, 53705	Materials Science	Ph.D	2012

Awards and Honors

- Associate Editor of Journal of Applied Physics, 2020-present
- James M. Tien '66 Early Career Award, 2020
- Early Career Member in the Editorial Advisory Board of Journal of Applied Physics, 2020
- ASM International Geisler award, 2019
- Rensselaer Polytechnic Institute School of Engineering Research Excellence Award, 2018
- Air Force Office of Scientific Research (AFOSR) Young Investigator Research Program (YIP) Award, 2017

Recent Selected Publications

- 1) Jiang J, Chen Z, Hu Y, Xiang Y, Zhang L, Wang Y, Wang GC, **Shi J**, Flexo-Photovoltaic Effect in MoS₂. *Nat. Nanotechnol.*, 2021, DOI: 10.1038/s41565-021-00919-y.
- 2) Hu Y, Florio F, Chen Z, Phelan W. A., Siegler M. A., Zhou Z, Guo Y, Hawks R, Jiang J, Feng J, Zhang L, Wang B, Wang Y, Gall D, Palermo E. F., Lu Z, Sun X, Lu T-M, Zhou H, Ren Y, Wertz E, Sundararaman R, **Shi J**, A chiral switchable photovoltaic ferroelectric 1D perovskite. *Sci. Adv.*, 2020, 6, eaay4213.
- 3) Guo Y, Sun X, Jiang J, Wang B, Chen X, Yin Y, Qi W, Gao L, Zhang L, Lu Z, Jia R, Pendse S, Hu Y, Chen Z, Wertz E, Gall D, Feng J, Lu TM, **Shi J**, A reconfigurable remotely epitaxial VO₂ electrical heterostructure. *Nano Lett.*, 2020, 20, 33.
- 4) Chen J, Mao W, Ge B, Wang J, Ke X, Wang V, Wang Y, Döbeli X, Geng W, Matsuzaki H, **Shi J**, Jiang Y, Revealing the role of lattice distortions in the hydrogen-induced metal-insulator transition of SmNiO₃. *Nat. Commun.* 2019, 10, 694
- 5) Jiang J, Sun X, Chen X, Wang B, Chen Z, Hu Y, Guo G, Zhang L, Ma Y, Gao L, Zheng F, Jin L, Chen M, Ma Z, Zhou Y, Padture NP, Beach K, Terrones H, Shi Y, Gall D, Lu TM, Wertz E, Feng J, **Shi J**, Carrier lifetime enhancement in halide perovskite via remote epitaxy. *Nat. Commun.* 2019, 10, 4145.
- 6) Chen J, Mao W, Gao L, Yan F, Yajima T, Chen N, Chen Z, Dong H, Ge B, Zhang P, Cao X, Wilde M, Jiang Y, Terai T, **Shi J**, Electron-doping Mottronics in strongly correlated perovskite. *Adv. Mater.*, 2019, 1905060.
- 7) Wang Y, Sun X, Chen Z, Cai Z, Zhou H, Lu TM, **Shi J**. Defect-engineered epitaxial VO_{2±δ} in strain engineering of heterogeneous soft crystals. *Sci. Adv.* 2018, 4, eaar3679.
- 8) Wang Y, Sun X, Chen Z, Sun Y Y, Zhang S, Lu T-M, Wertz E, and **Shi J**. High-Temperature Ionic Epitaxy of Halide Perovskite Thin Film and the Hidden Carrier Dynamics. *Adv. Mater.* 2017, 29, 1702643.
- 9) Wang Y, Sun X, Shivanna R, Yang Y, Chen Z, Guo Y, Wang G-C, Wertz E, Deschler F, Cai Z, Zhou H, Lu T-M, **Shi J**. Photon Transport in One-Dimensional Incommensurately Epitaxial CsPbX₃ Arrays. *Nano Lett.* 2016, 16, 7974.

- 10) Wang Y, Seewald L, Sun Y-Y, Keblinski P, Sun X, Zhang S, Lu T-M, Johnson J, Hwang J, **Shi J**, Nonlinear electron-lattice interactions in a wurzite semiconductor enabled via strongly correlated oxide. *Adv. Mater.* 2016, 28, 8975.

All Publications

Journal Articles

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2021

97. Jia R, Kum H-S, Sun X, Guo Y, Wang B, Fang P, Jiang J, Gall D, Lu T-M, Washington M, Kim J, Shi J, van der Waals Epitaxy and Remote Epitaxy of LiNbO₃ Thin Films by Pulsed Laser Deposition. *J. Vac. Sci. Technol. A*, 2021, in press (EDITORS' PICK).
96. Jiang J, Chen Z, Hu Y, Xiang Y, Zhang L, Wang Y, Wang GC, Shi J, Flexo-Photovoltaic Effect in MoS₂. *Nature Nanotechnology*, 2021, DOI: 10.1038/s41565-021-00919-y.
95. Zhang L, Jiang J, Cai Y, Yao S, Azhar B, Chen Z, Hu Y, Pendse S, Guo Y, Jia R, Tian Z, Sun C, Liao P, and Shi J, Doping-Enabled Reconfigurable Strongly Correlated Phase in a Quasi-2D Perovskite. *J. Phys. Chem. Lett.*, 2021, ASAP.
94. Guo Y, Goodge B, Zhang L, Jiang J, Chen Y, Kourkoutis L, Shi J, Unit-cell-thick domain in free-standing quasi-2D ferroelectric material. *Phys. Rev. Mater.*, 2021, in press (EDITORS' SUGGESTION).
93. Valdman L, Wen X, Chen Z, Washington M, Lu TM, Shi J, Wang GC, Water-assisted exfoliation of epitaxial CdTe film from mica analyzed with azimuthal RHEED. *Appl. Surf. Sci.*, 2021, 536, 147886.

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92. McGahay ME, Wang B, Shi J, Gall D, Band gap and electron transport in epitaxial cubic Cr_xAl_{1-x}N (001). *Phys. Rev. B.*, 2020, 101, 205206.
91. Zhu W, Shen J, Li M, Yang K, Bu W, Sun YY, Shi J, Lian J, Kinetically Controlled Growth of Sub-Millimeter 2D Cs₂SnI₆ Nanosheets at the Liquid-Liquid Interface. *Small*, 2020, ASAP.
90. Wen X, Lu Z, Sun X, Xiang Y, Chen Z, Shi J, Bhat I, Wang GC, Washington M, Lu TM, Epitaxial CdTe thin films on mica by vapor transport deposition for flexible solar cells. *ACS Appl. Energy Mater.*, 2020, 3, 4589.
89. Pendse S, Jiang J, Guo Y, Zhang L, Chen Z, Lu Z, Wang Y, Hu Y, Li S, Feng J, Lu TM, Sun YY, Shi J, Unit-Cell-Thick Oxide Synthesis by Film-Based Scavenging. *J. Phys. Chem. C*, 2020, 124, 8394.
88. Pendse S, Jiang J, Zhang L, Guo Y, Chen Z, Hu Y, Lu Z, Li S, Feng J, Lu TM, Shi J, Tuning phase transition kinetics via van der Waals epitaxy of single crystalline VO₂ on hexagonal-BN. *J. Cryst. Growth*, 2020, 543, 125699.
87. Wang H, Liu X, Niu P, Wang S, Shi J, Li L, Porous Two-Dimensional Materials for Photocatalytic and Electrocatalytic Applications. *Matter*, 2020, 2, 1377.
86. Cai Y, Liu Y, Xie Y, Zou Y, Gao C, Zhao Y, Liu S, Xu H, Shi J, Guo S, Sun C, Band structure, effective mass, and carrier mobility of few-layer h-AlN under layer and strain engineering. *APL Mater.*, 2020, 8, 021107.
85. Hu Y, Florio F, Chen Z, Phelan W. A., Siegler M. A., Zhou Z, Guo Y, Hawks R, Jiang J, Feng J, Zhang L, Wang B, Wang Y, Gall D, Palermo E. F., Lu Z, Sun X, Lu T-M, Zhou H, Ren Y, Wertz E, Sundararaman R, Shi J, A chiral switchable photovoltaic ferroelectric 1D perovskite. *Science Advances*, 2019, 6, eaay4213.
84. Shi J, A structurally unstable semiconductor stabilized and enhanced by strain. *Nature*, 2020, 577, 171.
83. Guo Y, Sun X, Jiang J, Wang B, Chen X, Yin Y, Qi W, Gao L, Zhang L, Lu Z, Jia R, Pendse S, Hu Y, Chen Z, Wertz E, Gall D, Feng J, Lu TM, Shi J, A reconfigurable remotely epitaxial VO₂ electrical heterostructure. *Nano Lett.*, 2020, 20, 33.

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82. Wen Z, Wang Y, Chen Z, Shi J, Chemical Vapor Growth of Silicon Phosphide Nanostructures. *MRS Advances*, 2019, DOI: 10.1557/adv.2019.437
81. Shi J, Chen L-Q., Preface to Special Topic: Strain Engineering in Functional Materials. *J. Appl. Phys.* 2019, 125, 082201.
80. Chen J, Mao W, Gao L, Yan F, Yajima T, Chen N, Chen Z, Dong H, Ge B, Zhang P, Cao X, Wilde M, Jiang Y, Terai T, Shi J, Electron-doping Mottronics in strongly correlated perovskite. *Adv. Mater.*, 2019, 1905060.

79. Littlejohn, Li Z, Lu Z, Sun X, Nawarat P, Wang Y, Li Y, Wang T, Chen Y, Zhang L, Li H, Kisslinger K, Shi S, Shi J, Raelarijaona A, Shi W, Terrones H, Lewis KM, Washington M, Lu TM, Wang GC, Large Metallic Vanadium Disulfide Ultrathin Flakes for Spintronic Circuits and Quantum Computing Devices. *ACS Appl. Nano Mater.*, 2019, 2, 3684
78. Jiang J, Sun X, Chen X, Wang B, Chen Z, Hu Y, Guo G, Zhang L, Ma Y, Gao L, Zheng F, Jin L, Chen M, Ma Z, Zhou Y, Padture NP, Beach K, Terrones H, Shi Y, Gall D, Lu TM, Wertz E, Feng J, Shi J, Carrier lifetime enhancement in halide perovskite via remote epitaxy. *Nat. Commun.* 2019, 10, 4145.
77. Chen J, Mao W, Ge B, Wang J, Ke X, Wang V, Wang Y, Döbeli X, Geng W, Matsuzaki H, Shi J, Jiang Y, Revealing the role of lattice distortions in the hydrogen-induced metal-insulator transition of SmNiO₃. *Nat. Commun.* 2019, 10, 694.
76. Yang S, Zhang Y, Wang S, Shi J, Liu X, Li L, Rational Construction of MoS₂/Mo₂N/C Hierarchical Porous Tubular Nanostructures for Enhanced Lithium Storage. *J. Mater. Chem. A*, 2019, DOI: 10.1039/C9TA04516C.
75. Wang X, Ling Y, Lian X, Xin Y, Dhungana K, Perez-Orive F, Knox J, Chen Z, Zhou Y, Beery D, Hanson K, Shi J, Lin S, Gao H, Suppressed Phase Separation of Mixed-Halide Perovskites Confined in Endotaxial Matrices. *Nat. Commun.* 2019, 10, 695.
74. Li L, Li Z, Yoshimura A, Sun C, Wang T, Chen Y, Chen Z, Littlejohn A, Xiang Y, Hundekar P, Bartolucci S, Shi J, Shi S-F, Meunier V, Wang G-C, Koratkar N, Vanadium disulfide flakes with nanolayered titanium disulfide coating as cathode materials in lithium-ion batteries. *Nat. Commun.* 2019, 10, 1764.
73. Ullal C, Shi J, Sundararaman S, Electron mobility in graphene without invoking the Dirac equation. *Am. J. Phys* 2019, 87, 291.
72. Mohanty D, Lu Z, Sun X, Xiang Y, Gao L, Shi J, Zhang L, Kisslinger K, Washington M, Wang GC, Lu TM, Bhat I Growth of epitaxial CdTe thin films on amorphous substrates using single crystal graphene buffer. *Carbon* 2019, 144, 519-524.

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71. Chen Z, Wang Y, Sun X, Xiang Y, Hu Y, Jiang J, Feng J, Sun Y-Y, Wang X, Wang G-C, Lu T-M, Gao H, Wertz E, Shi J. Remote Phononic Effects in Epitaxial Ruddlesden-Popper Halide Perovskites. *J. Phys. Chem. Lett.* 2018, 9, 6676.
70. Mohanty D, Lu Z, Sun X, Xiang Y, Wang Y, Ghosha D, Shi J, Gao L, Shi S, Washington M, Wang G-C, Lu T-M and Bhat I Metalorganic vapor phase epitaxy of large size CdTe grains on mica through chemical and van der Waals interactions. *Phys. Rev. Mater.* 2018, 2, 113402.
69. Wang Y, Gao L, Yang Y, Xiang Y, Chen Z, Dong Y, Zhou H, Cai Z, Wang G-C, Shi J. The Non-trivial Strength of van der Waals Epitaxial Interaction in Soft Perovskites. *Phys. Rev. Mater.* 2018, 2, 076002.
68. Wang Y, Sun X, Chen Z, Cai Z, Zhou H, Lu TM, Shi J. Defect-engineered epitaxial VO₂±d in strain engineering of heterogeneous soft crystals. *Science Advances* 2018, 4, eaar3679. .
67. Chen Z, Guo Y, Wertz E, Shi J. Merits and challenges of Ruddlesden-Popper soft halide perovskites in electro-optics and optoelectronics. *Adv. Mater.* 2018, 1803514.
66. Sun X, Lu Z, Xiang Y, Wang Y, Shi J, Wang GC, Washington M, Lu TM. Van der Waals Epitaxy of Antimony Islands, Sheets, and Thin Films on Single-Crystalline Graphene. *ACS Nano* 2018, 12, 6100.
65. Wang Y*, Hu Y* (*These authors contributed equally) Chen Z, Guo Y, Wang D, Wertz E, Shi J. Effect of Strain on the Curie Temperature and Band Structure of Low-Dimensional SbSI. *Appl. Phys. Lett* 2018, 112, 183104.
64. Li L, Basu S, Wang Y, Chen Z, Hundekar P, Wang B, Shi J, Shi Y, Narayanan S, Koratkar N. Self-heating-induced healing of lithium dendrites. *Science* 2018, 359, 1513. .
63. Ge C, Hu M, Wu P, Tan Q, Chen Z, Wang Y, Shi J, Feng J. Ultralow Thermal Conductivity and Ultrahigh Thermal Expansion of Single Crystal Organic-Inorganic Hybrid Perovskite CH₃NH₃PbX₃ (X=Cl, Br, I). *J. Phys. Chem. C* 2018, 122, 15973.
62. Duan Y, Li P, Chen Z, Shi J, Ma L. Surface evolution and growth kinetics of Ti₆Al₄V alloy in pack boriding. *J. Alloys Compd.* 2018, 742, 690.
61. Sun X, Lu Z, Chen Z, Wang Y, Shi J, Washington M, Lu T-M. A Single Crystal Graphene-Directed van der Waals Epitaxial Resistive Switching. *ACS Appl. Mater. Interfaces* 2018, 10, 6730 .
60. Sun X, Chen Z, Wang Y, Lu Z, Shi J, Washington M, Lu T-M. van der Waals epitaxial ZnTe thin film on single-crystalline graphene. *J. Appl. Phys.* 2018, 123, 025303.
59. Zhu W, Xin G, Wang Y, Xin M, Yao T, Xu W, Fang M, Shi S, Shi J, Lian J. Tunable optical property and stability of lead free all inorganic perovskite Cs₂SnI_{6-x}Cl_x. *J. Mater. Chem. A* 2018, 6, 2577.

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58. Sun X, Shi J, Washington M A, Lu T-M. Probing the interface strain in a 3D-2D van der Waals heterostructure. *Appl. Phys. Lett.* 2017, 111, 151603.
57. Hu Y*, Guo Y*, (*These authors contributed equally) Wang Y, Chen Z, Sun X, Feng J, Lu T M, Wertz E and Shi J. A review on low dimensional metal halides: Vapor phase epitaxy and physical properties. *J. Mater. Res.* 2017, 32, 3992(An invited article in memory of Prof. Jan van der Merwe) .
56. Chen Z, Wang Y, Sun X, Guo Y, Hu Y, Wertz E, Wang X, Gao H, Lu T M and Shi J. van der Waals Hybrid Perovskite of High Optical Quality by Chemical Vapor Deposition. *Adv. Opt. Mater.* 2017, 5, 1700373.
55. Wang Y, Sun X, Chen Z, Sun Y Y, Zhang S, Lu T-M, Wertz E, and Shi J. High-Temperature Ionic Epitaxy of Halide Perovskite Thin Film and the Hidden Carrier Dynamics. *Adv. Mater.* 2017, 29, 1702643.
54. Sun X, Lu Z, Xie W, Wang Y, Shi J, Zhang S, Washington M, and Lu T M. van der Waals epitaxy of CdS thin films on single-crystalline graphene. *Appl. Phys. Lett.* 2017, 110, 153104.
53. Yang Y B, Seewald L, Mohanty D, Wang Y, Zhang L H, Kisslinger K, Xie W, Shi J, Bhat I, Zhang S, Lu T M, Wang G C. Surface and interface of epitaxial CdTe film on CdS buffered van der Waals mica substrate. *Appl. Surf. Sci.* 2017, 413, 219 .
52. Wang Y, Chen Z, Deschler F, Sun X, Lu T-M, Wertz A E, Hu J-M, Shi J. Epitaxial Halide Perovskite Lateral Double Heterostructure. *ACS Nano* 2017, 11, 3355.
51. Hoye R L Z, Schulz P, Schelhas L T, Holder A M, Stone K H, Perkins J D, Vigil-Fowler D, Siol S, Scanlon D O, Zakutayev A, Walsh A, Smith I C, Melot B C, Kurchin R C, Wang Y, Shi J, Marques F C, Berry J J, Tumas W, Lany S, Stevanovic V, Toney M F, Buonassisi T. Perovskite-inspired photovoltaic materials: Toward best practices in materials characterization and calculations. *Chem. Mater.* 2017, 29, 1964.
50. Sun X, Wang Y, Seewald L, Chen Z, Shi J, Washington M, Lu T-M. Decoupling Interface Effect on the Phase Stability of CdS Thin Films by van der Waals Heteroepitaxy. *Appl. Phys. Lett.* 2017, 110, 041602.

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49. Wang Y, Sun X, Shivanna R, Yang Y, Chen Z, Guo Y, Wang G-C, Wertz E, Deschler F, Cai Z, Zhou H, Lu T-M, Shi J. Photon Transport in One-Dimensional Incommensurately Epitaxial CsPbX₃ Arrays. *Nano Lett.* 2016;16,7974-7981 .
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47. Chen Z, Wang Y, Shi Y, Hsu B, Yang Z, Shi J, Regulating Carrier Dynamics in Single Crystal Halide Perovskite via Interface Engineering and Optical Doping. *Adv. Electron. Mater.* 2016;2, 1600248.
46. Wang Y, Seewald L, Sun Y-Y, Keblinski P, Sun X, Zhang S, Lu T-M, Johnson J, Hwang J, Shi J, Nonlinear electron-lattice interactions in a wurzite semiconductor enabled via strongly correlated oxide. *Adv. Mater.* 2016;28, 8975-8982.
45. Yang Y B, Dash J K , Xiang Y, Wang Y, Shi J, Dinolfo P H, Lu T-M, Wang G-C. Tuning the phase and optical properties of ultrathin SnS_x films. *J. Phys. Chem. C* 2016,120(24),13199-13214.
44. Yang Y B, Dash J, LittleJohn A, Xiang Y, Wang Y, Shi J, Zhang L, Kisslinger K, Lu T-M, Wang G-C. Large Single Crystal SnS₂ Flakes Synthesized from Co-evaporation of Sn and S. *Cryst. Growth Des.* 2016,16(2),961-973.
43. Zhou Y, Guan X, Zhou H, Ramadoss K, Adam S, Liu H, Lee S, Shi J, Tsuchiya M, Fong D D, Ramanathan S. Strongly correlated perovskite fuel cells. *Nature* 2016;534, 231-234.
42. Sun Y, Shi J, Lian J, Gao W, Agiorgousis ML, Zhang S. Discovering Lead-Free Perovskite Solar Materials with Split-Anion Approach. *Nanoscale* 2016;8, 6284-6289.
41. Wang Y, Sun Y, Zhang S, Lu T-M, Shi J. Band Gap Engineering of a Soft Inorganic Compound PbI₂ by Incommensurate Van der Waals Epitaxy. *Appl. Phys. Lett.* 2016;108, 013105.

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40. Wang Y, Shi Y, Xin G, Lian J, Shi J. Two-Dimensional Van der Waals Epitaxy Kinetics in a Three-Dimensional Perovskite Halide. *Cryst. Growth Des.* 2015, 15 (10), pp 4741-4749.
39. Yin X, Shi J, Niu X, Huang H, Wang X. Wedding Cake Growth Mechanism in One-Dimensional and Two-Dimensional Nanostructure Evolution. *Nano Lett.* 2015;15, 7766-777.
38. Shao D, Gao J, Xin G, Wang Y, Li L, Shi J, Lian J, Koratkar N, Sawyer S. Cl-doped ZnO Nanowire Arrays on 3D Graphene Foam with Highly Efficient Field Emission, and Photocatalytic Properties. *Small* 2015;11, 4785-92.

37. Bo C, Zheng X, Yang M, Zhou Y, Kundu S, Shi J, Zhu K, Priya S. Interface band structure engineering by ferroelectric polarization in perovskite solar cells. *Nano Energy* 2015;13:582.
36. Bo C, Shi J, Zheng X, Zhou Y, Zhu K, Priya S. Ferroelectric solar cells based on inorganic-organic hybrid perovskites. *J. Mater. Chem. A* 2015;3:7699.

BEFORE JOINING RPI

35. Mi H, Seo J-H, Ku C-J, Shi J, Wang X D, Lu Y, Ma Z. Microwave TFTs Made of MOCVD ZnO With ALD Al₂O₃ Gate Dielectric. *IEEE Journal of the Electron Devices Society*. 2016;4:55-59.
34. Chen J, Zhou Y, Middey J, Jiang J, Chen N, Shi X, Döbeli M, Shi J, Chakhalian J, Ramanathan S. Self-limited kinetics of electron doping in correlated oxides. *Appl Phys Lett*. 2015;107:031905.
33. Zhou Y, Park J, Shi J, Chhowalla M, Park H, Weitz DA, Ramanathan S. Control of Emergent Properties at a Correlated Oxide Interface with Graphene. *Nano Lett*. 2015;15:1627.
32. Ha SD, Shi J, Meroz Y, Mahadevan, L, Ramanathan S. Neuromimetic Circuits with Synaptic Devices Based on Strongly Correlated Electron Systems *Phys. Rev. Applied* 2014;2:064003.
31. Sim J, Shi J, Ramanathan S. Ultra-thin freestanding ceria membranes: layer transfer techniques and high temperature conductivity studies. *J Mater Chem A*. 2014;2:19019.
30. Shi J*, Zhou Y*, (*These authors contributed equally) Ramanathan S. Colossal resistance switching and band gap modulation in a perovskite nickelate by electron doping. *Nat Commun*. 2014;5:4860.
29. Wang X, Li Z, Shi J, Yu Y. One-dimensional titanium dioxide nanomaterials: nanowires, nanorods and nanobelts. *Chem Rev*. 2014;114:9346.
28. Yan F*, Schoofs F*, Shi J*, (*These authors contributed equally) Ha SD, Jaramillo R, Ramanathan S. Local charge writing in epitaxial SmNiO₃ thin films. *J Mater Chem C*. 2014;2(19):3805-11.
27. Shi J, Ha SD, Zhou Y, Schoofs F, Ramanathan S. A correlated nickelate synaptic transistor. *Nat Commun*. 2013;4:2676.
26. Ha SD, Vetter U, Shi J, Ramanathan S. Electrostatic gating of metallic and insulating phases in SmNiO₃ ultrathin films. *Appl Phys Lett*. 2013;102(18):183102.
25. Wang X, Shi J. Evolution of titanium dioxide one-dimensional nanostructures from surface-reaction-limited pulsed chemical vapor deposition. *J Mater Res*. 2013;28(03):270-9.
24. Shi J, Zhao P, Wang X. Piezoelectric-polarization-enhanced photovoltaic performance in depleted-heterojunction quantum-dot solar cells. *Adv Mater*. 2013;25:916-21.
23. Shi J, Li ZD, Kvit A, Krylyuk S, Davydov A, Wang XD. Electron microscopy observation of TiO₂ nanocrystal evolution in high-temperature atomic layer deposition. *Nano Lett*. 2013;13(11):5727-34.
22. Nikoobakht B, Wang X, Herzing A, Shi J. Scalable synthesis and device integration of self-registered one-dimensional zinc oxide nanostructures and related materials. *Chem Soc Rev*. 2013;42(1):342-65.
21. Starr MB, Shi J, Wang X. Piezopotential-driven redox reactions at the surface of piezoelectric materials. *Angew Chem Int Ed*. 2012;51(24):5962-6.
20. Shi J, Wang X. Hierarchical TiO₂-Si nanowire architecture with photoelectrochemical activity under visible light illumination. *Energy Environ Sci*. 2012;5(7):7918-22.
19. Shi J*, Starr MB*, (*These authors contributed equally) Wang X. Band structure engineering at heterojunction interfaces via the piezotronic effect. *Adv Mater*. 2012;24(34):4683-91.
18. Leong M, Bayerl DJ, Shi J, Wang X. Evolution of lead titanate nanostructures from nanoparticle self-assembly. *Sci Adv Mater*. 2012;4(8):832-6.
17. Wang F, Seo J-H, Bayerl D, Shi J, Mi H, Ma Z, Zhao D, Shuai Y, Zhou W, Wang XD. An aqueous solution-based doping strategy for large-scale synthesis of Sb-doped ZnO nanowires. *Nanotechnology*. 2011;22(22):225602.
16. Sun C, Shi J, Bayerl DJ, Wang X. PVDF microbelts for harvesting energy from respiration. *Energy Environ Sci*. 2011;4(11):4508-12.
15. Hong H, Shi J, Yang Y, Zhang Y, Wang X and Cai W. Zinc oxide nanowire as a novel platform for optical imaging. *J Nucl Med* 2011;52:1558.
14. Shi J, Wang X. Functional semiconductor nanowires via vapor deposition. *J Vac Sci Technol B*. 2011;29(6):060801.
13. Shi J, Wang X. Growth of rutile titanium dioxide nanowires by pulsed chemical vapor deposition. *Cryst Growth Des*. 2011;11(4):949-54.

12. Shi J, Sun C, Starr MB, Wang X. Growth of titanium dioxide nanorods in 3D-confined spaces. *Nano Lett.* 2011;11(2):624-31.
11. Shi J, Starr MB, Xiang H, Hara Y, Anderson MA, Seo J-H, Ma ZQ, Wang XD. Interface engineering by piezoelectric potential in ZnO-based photoelectrochemical anode. *Nano Lett.* 2011;11(12):5587-93.
10. Shi J, Hong H, Ding Y, Yang Y, Wang F, Cai W, Wang XD. Evolution of zinc oxide nanostructures through kinetics control. *J Mater Chem.* 2011;21(25):9000-8.
9. Shi J, Hara Y, Sun C, Anderson MA, Wang X. Three-dimensional high-density hierarchical nanowire architecture for high-performance photoelectrochemical electrodes. *Nano Lett.* 2011;11(8):3413-9.
8. Hong H, Shi J, Yang Y, Zhang Y, Engle JW, Nickles RJ, Wang XD, Cai W. Cancer-targeted optical imaging with fluorescent zinc oxide nanowires. *Nano Lett.* 2011;11(9):3744-50.
7. He L, Shi J, Sun X, Lin M, Yu P, Li H. Gold coated zinc oxide nanonecklaces as a SERS substrate. *J Nanosci Nanotechnol.* 2011;11(4):3509-15.
6. Sun C, Shi J, Wang X. Fundamental study of mechanical energy harvesting using piezoelectric nanostructures. *J Appl Phys.* 2010;108(3):034309.
5. Shi J, Wang X. Strain versus dislocation model for understanding the heteroepitaxial growth of nanowires. *J Phys Chem C.* 2010;114(5):2082-8.
4. Shi J, Li C, Zhang Y, Li H. Coupled heat and mass transfer in the entrance region of a circular tube with fully-developed parabolic flow and external convective heating. *Heat Mass Transfer.* 2010;46(5):563-70.
3. Shi J, Sun X, Zhang J, Lian J, Yu Q, Lin M, Li H. Epitaxial growth of horizontally aligned zinc oxide nanonecklace arrays on r-plane sapphire. *J Phys Chem C.* 2009;113(49):20845-54.
2. Shi J, Grutzik S, Wang X. Zn cluster drifting effect for the formation of ZnO 3D nanoarchitecture. *ACS Nano.* 2009;3(6):1594-602.
1. Zhang J, Fan Q, Shi J, Xiao G, Gu M. Microstructural evolution during self-propagating high-temperature synthesis of Ti-Al system. *J Wuhan Univ Technol.* 2008;23(3):381-5.

Invited Book Chapters

1. Wang X, Shi J. Piezoelectric nanogenerators for self-powered nanodevices. In: Ciofani G, Arianna M, editors. *Piezoelectric nanomaterials for biomedical applications*: Springer Berlin Heidelberg; 2012. p. 135-72.
2. Shi J, Wang X. Bio-inspired 3D nanoarchitectures. In: Zhou W, Wang ZL, editors. *Three-dimensional nanoarchitectures*. New York: Springer New York; 2011. p. 29-58.

Conference Proceedings

1. Wang X, Shi J, editors. Multifunctional ZnO nanostructures: from material growth to novel applications. *SPIE OPTO*; 2011. *International Society for Optics and Photonics*.
2. Kim M, Seo J-H, Yang H, Shi J, Mawst L, Zhou W, Wang X, Ma ZQ. Fabrication and characterization of Si/GaInP heterojunction photodetectors. *Photonics and Optoelectronics (SOPO), 2012 Symposium on; 2012. IEEE*; 2012. p. 1-3.

Patents

1. Wang X, Shi J, inventors; Wisconsin Alumni Research Foundation, assignee. Methods for the growth of three-dimensional nanorod networks. United States patent US8771822B2. 2014.
2. Shi J, Zhou Y, Ramanathan R, inventors; PRESIDENT AND FELLOWS OF HARVARD COLLEGE [US/US]; 17 Quincy Street Cambridge, MA 02138 (US), assignee. DOPANT-DRIVEN PHASE TRANSITIONS IN CORRELATED METAL OXIDES Pub. No. WO/2015/066558. 2015.