

Zhijian Sun

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Skills

- **Technical Programming languages and computer software:** Processing, Java, Python, VBA, Microsoft offices, Gulp, JMP pro, ChemDraw, Chem3D and Adobe Photoshop.
- **Materials fabrication skills:** Hydrothermal and solution reactions, annealing, curing schedule designs, O₂ plasma cleaning, electrospinning, spin coating, punching cells, doctor blading, ball milling.
- **Materials characterization skills:** DSC, TGA, TMA, DMA, Rheometer, FTIR, TEM, AFM, SEM, XPS, XRD, EDX, UV-Vis, Ellipsometry, Laser Flash, Four-point-probe, Tensile testing, EIS, Full/Half cells testing (capacity, voltage, cycle lifetime, etc.) and J-V curve testing.

Education Background

08/2018-Present	Georgia Institute of Technology PhD Candidate, Materials Science and Engineering (major) Cumulative GPA: 3.31/4.00	Atlanta, Georgia
08/2016-05/2018	University of Pennsylvania Master's, Materials Science and Engineering (major) Cumulative GPA: 3.66/4.00 (Master Scholar Awards)	Philadelphia, Pennsylvania
08/2011-05/2016	Iowa State University Bachelor's, Materials Engineering (major) & Mathematics (major) Cumulative GPA: 3.64/4.00 (Highest 2% Las Junior Spring 2014; Dean honors list)	Ames, Iowa

Research Experience

08/2018-Present	Dr. Ching-Ping Wong Lab , Graduate Research Assistant	Atlanta, Georgia
	<ul style="list-style-type: none">● Investigated and fabricated high thermal conductivity and thin die attach films for 3D semiconductor packaging● Synthesized and investigate novel cathode materials and double cross-link gel electrolyte Zinc ion batteries● Design and make the perovskite-perovskite tandem solar cells to achieve the higher efficiency and longer stability	
08/2016-05/2018	Dr. Christopher B. Murray Lab , Research Assistant	Philadelphia, Pennsylvania
	<ul style="list-style-type: none">● Synthesized CdSe/CdS core/shell structures and mixed them with polymeric matrixes to improve the mechanical and structural properties of the system by around 10%● Combined nanorods-polymer composites with electrospinning to produce nanofibers	
01/2015-05/2015	Dr. Beckman Scott Lab , Research Assistant	Ames, Iowa
	<ul style="list-style-type: none">● Used VIM code to conduct experiments related to heat transport and the Green Kubo theorem● Modeled the material structure using Gulp and studied the influence of certain variables such as temperature on dynamics modulus	

09/2014-12/2014 **Dr. Ludovico Cademartiri Lab**, Research Assistant **Ames, Iowa**

- Engineered 3.5 nm large-scale colloidal zirconia nanoparticles
- Studied the formation of cracks in the films composed of colloidal nanocrystals after plasma processing by optical microscope and TEM
- Developed strategies for avoiding cracks for super-lattices of nanoparticles and by adding chemicals containing zinc that have historically better results for preventing cracks

09/2013-05/2014 **Ames National Lab for Dr. Mufit Akinc**, Research Assistant **Ames, Iowa**

- Carried out over 20 experiments related to viscosity of the nano-powders; in charge of setting up equipment and coming up with post-experiment analysis using STATA
- Researched the influence of concentration and PH value to viscosity by designing and conducting an experiment with over 10 controlled variables

Work Experiences

2014 summer & 2015 summer Intern at **WISCO-NIPPONSTEEL Tinplate Co., Ltd.** **Wuhan, China**

- Learned and participated in the polishing of tinplate samples by Abrasive Polishing for enhancing and restoring the looks of tinplate; Randomized and analyzed samples using JMP pro
- Measured the strength, resilience, and structural change of tinplate samples under different circumstances to get good quality Tin-plates for industry use

Selected Publications

- Chu, Q.Q. *, **Sun, Z.** *, Ding, B., Moon, K.S., Yang, C.J., Wong, C.P., 2020. Greatly enhanced power conversion efficiency of hole-transport-layer-free perovskite solar cell via coherent interfaces of perovskite and carbon layers. *Nano Energy* (Just accepted).
- Zhang, Y., Wu, Y., You, W., Tian, M., Huang, P.W., Zhang, Y., **Sun, Z.**, Ma, Y., Hao, T. and Liu, N., 2020. A deeply rechargeable and hydrogen-evolution-suppressing zinc anode in alkaline aqueous electrolyte. *Nano Letters*, 20 (6), pp. 4700-4707.
- An, D., Cheng, S., Xi, S., Zhang, Z., Duan, X., Ren, Y., Li, J., **Sun, Z.**, Liu, Y. and Wong, C.P., 2020. Flexible thermal interfacial materials with covalent bond connections for improving high thermal conductivity. *Chemical Engineering Journal*, 383, p.123151.
- An, D., Duan, X., Cheng, S., Zhang, Z., Yang, B., Lian, Q., Li, J., **Sun, Z.**, Liu, Y. and Wong, C.P., 2020. Enhanced thermal conductivity of natural rubber based thermal interfacial materials by constructing covalent bonds and three-dimensional networks. *Composites Part A: Applied Science and Manufacturing*, 135, p.105928.
- Jiang, C., Wang, Z., Li, J., **Sun, Z.**, Zhang, Y., Li, L., Moon, K.S. and Wong, C., 2020. RGO-templated lignin-derived porous carbon materials for renewable high-performance supercapacitors. *Electrochimica Acta*, 353, p.136482.
- Xu, S., Huang, X., Chen, Y., Liu, Y., Zhao, W., **Sun, Z.**, Zhu, Y., Liu, X. and Wong, C.P., 2019. Silver nanoparticle-enzyme composite films for hydrogen peroxide detection. *ACS Applied Nano Materials*, 2(9), pp.5910-5921.