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**Education:**

PhD: MIT MS: Binghamton University BS: Tsinghua University

**General Areas of Expertise:**

multiscale thermal transport and energy conversion

**Short Bio:**

Dr. Zhiting Tian is an Assistant Professor of Mechanical Engineering at Virginia Tech since 2014. She received her Ph.D. in Mechanical Engineering under the supervision of Prof. Gang Chen at MIT in 2014. She received her M.S. in Mechanical Engineering from Binghamton University in 2009 and her B.S. in Engineering Physics from Tsinghua University in 2007. Her group seeks fundamental understanding of multiscale thermal transport and energy conversion for diverse applications including renewable energy generation, food packaging, and clean water. Her group conducts both simulations (ab initio and classical calculations) and experiments (ultrafast laser and x-ray techniques). Her most recent awards include 2017 NSF CAREER Award, 2017 ACS Petroleum Research Fund Doctoral New Investigator Award, 2017 Dean's Award for Outstanding New Assistant Professor, 2017 3M Non-Tenured Faculty Award, 2016 Virginia Tech Scholar of the Week, and 2016 Virginia Tech Undergraduate Research Advisor Award.

**Five Representative Publications:**

1. E. Kanimba, M. Pearson, J. Sharp, D. Stokes, S. Priya, and Z.T. Tian, "A comprehensive modeling of a PbTe thermoelectric generator", Energy 142, 813-821 (2017)
2. E. Kanimba, M. Pearson, J. Sharp, D. Stokes, S. Priya, and Z.T. Tian, "A modeling comparison between a two-stage and three-stage cascaded thermoelectric generator", Journal of Power Sources 365, 266-272 (2017)
3. G.S. Jung, J.J. Yeo, Z.T. Tian, Z. Qin, M. J. Buehler, "Unusually low and density-insensitive thermal conductivity of three-dimensional gyroid graphene", Nanoscale 9(36), 13477-13484 (2017)
4. C. Li, H. Ma and Z.T. Tian, "Thermoelectric Properties of Crystalline and Amorphous Polypyrrole: A Computational Study", Applied Thermal Engineering 111, 1441-1447 (2017)
5. 19. H. Ma, C. Li, S. Tang, J. Yan, A. Alatas, L. Lindsay, B. Sales, and Z.T. Tian, "Boron arsenide phonon dispersion from inelastic x-ray scattering: potential for ultrahigh thermal conductivity", Physical Review B: Rapid Communications 94, 220303 (R) (2016)

**FEWSTERN Symposium 2017 Presentation Title and Abstract:**

Thermal and Electronic Transport in Inorganic and Organic Thermoelectric Materials

Fundamental understanding of thermal and electronic transport is the key to enhancing the energy conversion efficiency of thermoelectric materials. In this talk, I will first talk about first-principles calculations of phonon and electron transport in inorganic thermoelectric materials. We will start with rocksalt PbTe and PbSe, and move on to wurtzite ZnO. We will emphasize the strategies to reduce the lattice thermal conductivity. Then we apply first-principles calculations to organic thermoelectric materials. The thermoelectric properties of doped polypyrrole (PPy) will be discussed.