




Andrey Gunawan

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EDUCATION

- Ph.D. Mechanical Engineering**, Arizona State University (ASU), Tempe, AZ  2015
(Advisor: Patrick E. Phelan)
- M.S. Aerospace Engineering**, University of Southern California, Los Angeles, CA  2010
- B.S. Aeronautics and Astronautics**, Institut Teknologi Bandung (ITB), Bandung, Indonesia  2008

PROFESSIONAL EXPERIENCE

Research Engineer II, Georgia Institute of Technology Jan 2016 – present







Senior personnel at Scalable Thermal Energy Engineering Laboratory, currently co-leading \$2.2 million U.S. Department of Energy (DOE) Gen3CSP project on researching high temperature (>700 °C) thermophysical property measurements of heat transfer media and containment materials to advance high-temperature concentrating solar power (CSP) systems. [\[more info\]](#)

GRANTS AND CONTRACTS

- Co-Principal Investigator**, “Thermophysical Property Measurement of Heat Transfer Media and Containment Materials,” supported by **DOE Solar Energy Technologies Office (\$2,184,934)**, 08/15/18 – 08/15/23
- Senior Personnel**, “Sodium Ion Expansion Power Block for Distributed CSP,” supported by **DOE Solar Energy Technologies Office (\$2,348,780)**, 10/01/15 – 12/31/19

NOTABLE AWARDS AND HONORS

- Best Paper Award (2nd Prize), ASME Power & Energy 2018 Conference  2018
- Best Paper Award (1st Prize), ASME Power & Energy 2015 Conference  2015
- Joseph W. Richards Summer Fellowship, The Electrochemical Society  2014
- Link Foundation Energy Fellowship (Honorable Mention), Link Foundation  2014

SELECTED REFEREED PUBLICATIONS

Total Number of Citations: >1000

Google Scholar Profile: <https://scholar.google.com/citations?user=FOT749AAAAAJ&hl=en>

13. A. Gunawan, A. K. Singh, *A solar thermal sorption-enhanced steam methane reforming (SE-SMR) approach and its performance assessment*, **under review**
12. A. Gunawan, P. Tarakeshwar, V. Mujica, D.A. Buttry, P.E. Phelan, *Improving Seebeck Coefficient of Thermoelectrochemical Cells by Controlling Ligand Complexation at Metal Redox Centers*, **Appl. Phys. Lett.**, 118, 253901, 2021
11. A. Gunawan, A. Singh, R.A. Simmons, M.W. Haynes, A. Limia, J.M. Ha, P.A. Kottke, A.G. Fedorov, S.W. Lee, S.K. Yee, *A Cost-Performance Analysis of a Sodium Heat Engine for Distributed Concentrating Solar Power*, **Adv. Sustainable Syst.**, 4(6), 1900104, 2020

10. A. Gunawan, R.A. Simmons, M.W. Haynes, D. Moreno, A.K. Menon, M.C. Hatzell, S.K. Yee, *Technoeconomics of Cogeneration Approaches for Combined Power and Desalination from Concentrated Solar Power*, **ASME J. Sol. Energy Eng.**, 141(2), 021004, 2019
9. M.W. Haynes, A. Gunawan, S.K. Yee, *Techno-Economic Comparison Between Conventional and Innovative Combined Solar Thermal Power and Desalination Methods for Cogeneration*, Proceedings of the ASME 2018 Power Conference, POWER2018-7515, 2018 ([Best Paper Award \(Second Prize\) in the ASME Power Division Student Paper Competition](#))
8. A. Limia, J.M. Ha, P. Kottke, A. Gunawan, A.G. Fedorov, S.W. Lee, S.K. Yee, *A dual-stage sodium thermal electrochemical converter (Na-TEC)*, **J. Power Sources**, 371, pp. 217-224, 2017
7. A. Gunawan, N.W. Fette, P.E. Phelan, *Thermogalvanic Waste Heat Recovery System in Automobiles*, Proceedings of the ASME 2015 Power Conference, POWER2015-49094, 2015 ([Best Paper Award \(First Prize\) in the ASME Power Division Student Paper Competition](#))
6. S. Lee, P.E. Phelan, L. Dai, R. Prasher, A. Gunawan, R.A. Taylor, *Experimental Investigation of the Latent Heat of Vaporization in Aqueous Nanofluids*, **Appl. Phys. Lett.**, 104, pp. 151908, 2014
5. R.A. Taylor, J.K. Wong, S. Baek, Y. Hewakuruppu, X. Jiang, C. Chen, A. Gunawan, *Nanoparticle-Assisted Heating Utilizing a Low-Cost White Light Source*, **ASME J. Nanotechnol. Eng. Med.**, 4, pp. 040903, 2014
4. A. Gunawan, H. Li, C.-H. Lin, D.A. Buttry, V. Mujica, R.A. Taylor, R.S. Prasher, P.E. Phelan, *The Amplifying Effect of Natural Convection on Power Generation of Thermogalvanic Cells*, **Int. J. Heat Mass Transf.**, 78, pp. 423-434, 2014
3. A. Gunawan, C.-H. Lin, D.A. Buttry, V. Mujica, R.A. Taylor, R.S. Prasher, P.E. Phelan, *Liquid Thermoelectrics: Review of Recent and Limited New Data of Thermogalvanic Cell Experiments*, **Nanoscale Microscale Thermophys. Eng.**, 17, pp. 304-323, 2013 ([Cover Article](#); [Top 10 'Most cited articles'](#))
2. R.A. Taylor, S. Coulombe, T.P. Otanicar, P.E. Phelan, A. Gunawan, W. Lv, G. Rosengarten, R.S. Prasher, H. Tyagi, *Small Particle, Big Impacts: A Review of the Diverse Applications of Nanofluids*, **Appl. Phys. Rev.** (was still a part of J. Appl. Phys.), 113, pp. 011301, 2013 ([Cover Article](#))
1. R.A. Taylor, P.E. Phelan, R.J. Adrian, A. Gunawan, T.P. Otanicar, *Characterization of Light-Induced, Volumetric Steam Generator in Nanofluids*, **Int. J. Therm. Sci.**, 56, 1-11, 2012

SELECTED PROFESSIONAL SERVICE

Review Panel for National Science Foundation – SBIR/STTR (2019)

Session Organizer for 'Student Competition' Tracks at ASME Power Conferences (2016, 2017, 2018)

Referee for The Electrochemical Society – Georgia Local Conference Poster Competition (2018, 2019)

Journal reviewer for **Science**, **Joule**, *Solar Energy*, *Journal of Power Sources*, *International Journal of Heat and Mass Transfer*, *International Journal of Thermal Sciences*, *Journal of Thermophysics and Heat Transfer*, *ASME Journal of Solar Energy Engineering*, *ASME Journal of Electrochemical Energy Conversion and Storage*, *ASME Journal of Energy Resources Technology*, etc.

TEACHING & MENTORING EXPERIENCE

Instructor of Record for ME 3322–Thermodynamics (Georgia Tech, Spring 2020 & Fall 2017); ASU 101-MEE–The ASU Experience for Mechanical Engineering students (ASU, Fall 2015)

Current advisor for Georgia Tech undergraduate PURA students (2): Kristian T, Lockyear (B.S., 2021), Adele R. Payman (B.S., 2022)