2021 Sigma Xi Research Award Winners
Georgia Institute of Technology Chapter

FACULTY AWARDS

Sustained Research Award: (with a plaque, certificate, and $6,000)

- Professor Eberhard O. Voit, David D. Flanagan Chair, Georgia Research Alliance Eminent Scholar in Systems Biology, Wallace H. Coulter Department of Biomedical Engineering

Committee: Vladimir V. Tsukruk, Chair (MSE), Krista Walton, ChBE, Jeff Wu (ISyE), John Reynolds (CHEM)

Best Faculty Paper: (with a plaque, certificate, and $3,000 each)

- Joshua Weitz (School of Biological Sciences) and Clio Andris (City and Regional Planning, Interactive Computing), Corresponding Authors
  For the paper: Aroon Chande Seolha Lee, Mallory Harris, Quan Nguyen, Stephen J. Beckett, Troy Hilley, Clio Andris, and Joshua S. Weitz, Realtime, interactive website for US-county-level COVID-19 event risk assessment, Nature Human Behavior 4 (2020)1313-1319.
- D. Zeb Rocklin (School of Physics), Senior and Corresponding Author
  For the paper: James McInerney, Bryan Gin-ge Chen, Louis Theran, Christian D. Santangelo, and D. Zeb Rocklin, Hidden symmetries generate rigid folding mechanisms in periodic origami, Proceedings of the National Academy of Science (PNAS), 117(48) (2020) 30252-30259.

Committee: Stefan France, Chair (CHEM), Sankar Nair (ChBE), Meilin Liu (MSE), Konstantinos (Kostas) Konstantinidis, Professor (CEE)

Young Faculty Award: (with a plaque, certificate, and $3,000 each)

- Kyriakos G. Vamvoudakis, Assistant Professor, The Daniel Guggenheim School of Aerospace Engineering
- Cassie S. Mitchell, Assistant Professor, Wallace H. Coulter Department of Biomedical Engineering

Committee: Ryan Lively, Chair (ChBE), Daniel Goldman (Phys), William Ratcliff (Bio), Suresh Sitaraman (ME), Hang Lu (ChBE)

STUDENT AWARDS

Best Ph.D. Thesis: (with a plaque, certificate, and $1,000 each)

- Matthew G. Boebinger, School of Materials Science and Engineering, Advisor: Matthew McDowell
  Title: In Situ Examination of Nanoscale Reaction Pathways in Battery Materials
- Abhishek Das, School of Interactive Computing, Advisor: Dhruv Batra
  Title: Building Agents that Can See, Talk, and Act
- Minliang Liu, Woodruff School of Mechanical Engineering, Advisors: Wei Sun and Jerry Qi
  Title: Identification of In Vivo Material Properties of Ascending Thoracic Aortic Aneurysm: Towards Noninvasive Risk Assessment
- Matthew A. McDonald, School of Chemical and Biomolecular Engineering, Advisors: Andreas S. Bommarius, Martha A. Grover, Ronald W. Rousseau
  Title: Continuous Manufacturing of Beta-Lactam Antibiotics by Enzymatic Reactive Crystallization

- Hossein Taghinejad, School of Electrical and Computer Engineering, Advisor: Ali Adibi
  Title: Synthesis of Alloys and Lateral Heterostructures of Atomically Thin Transition-Metal Dichalocogenides for Optoelectronic Applications
- Mohammad Taghinejad, School of Electrical and Computer Engineering, Advisor: Wenshan Cai
  Title: Active and Nonlinear Nanophotonics Facilitated by Hot-Carrier Dynamics
- Mehrdad Tahmasbi, School of Electrical and Computer Engineering, Advisor: Matthieu Bloch
  Title: Covert Communication: From Classical Channels to Quantum Channels
- Hakki M. Torun, School of Electrical and Computer Engineering, Advisor: Madhavan Swaminathan
  Title: Machine Learning Based Design and Optimization for High-Performance Semiconductor Packaging and Systems
- Siddharth J. Varughese, School of Electrical and Computer Engineering, Advisor: Stephen E. Ralph
  Title: Performance Analysis and Impairment Identification in Optical Communication Systems
- Yamin Zhang, School of Chemical and Biomolecular Engineering, Advisor: Nian Liu
  Title: Understanding and Improving Zinc Anodes for High-Energy Rechargeable Alkaline Batteries

Committee: Alper Erturk, Chair (ME), Ali Adibi (ECE), Oliver Brand (ECE), Claudio Di Leo (AE), Phillip First (Physics), David Goldsman (ISyE), Carlos Silva (Chemistry), Wei Sun (BME), Yang Wang (CEE), Younan Xia (BME), Haomin Zhou (Mathematics)

Best M.S. Thesis: (with a plaque, certificate, and $500 each)

- Carlos A. Fernandez, Woodruff School of Mechanical Engineering, Advisor Marta C. Hatzell
  Title: Thermodynamic and Economic Considerations for Low-Temperature Electrochemical Nitrogen Fixation Technologies
- Samuel S. Hays, School of Chemical and Biomolecular Engineering, Advisor William J. Koros
  Title: Structure and Stability of Carbon Molecular Sieve Membranes Derived from 6FDA:BPDA-DAM Precursors

Committee: Koki Ho, Chair (AE), Peter Hesketh (ME), Aditya Prakash (CSE), A.J. Medford (ChBE)

Best Undergraduate Research: (with a plaque, certificate, and $250 each)

- Omar S. Shaikh, Computer Science, Advisors Duen Horng (Polo) Chau and Diyi Yang
- Laura H. Yang, School of Civil and Environmental Engineering, Advisors Kostas Konstantinidis and Nga Lee (Sally) Ng

Committee: Wenshan Cai, Chair (ECE), Shuyi Nei (BIO), Jess McDaniel (CHEM), Matthew McDowell (ME)