

# 2022 Sigma Xi Research Award Winners

## Georgia Institute of Technology Chapter

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### FACULTY AWARDS

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

- Professor Dimitri N. Mavris, Regents' Professor, S.P. Langley Distinguished Professor in Advanced Aerospace Systems Architecture, and Boeing Chair in Advanced Aerospace Systems Analysis, The Daniel Guggenheim School of Aerospace Engineering

*Committee: Eberhard O. Voit, Chair (BME), Andres Garcia (ME), Krista Walton (COE), Jeff Wu (ISyE)*

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

- Roman O. Grigoriev (School of Physics)  
*For the paper: P. A. K. Reinbold, M. Kageorge, M. F. Schatz & R. O. Grigoriev, Robust learning from noisy, incomplete, high-dimensional experimental data via physically constrained symbolic regression, Nature Communicators 12 (2021) 3219.*
- Nga Lee (Sally) Ng (School of Chemical and Biomolecular Engineering, School of Earth and Atmospheric Sciences)  
*For the coherent set of papers:*
  - (1) Joo, T., Takeuchi, M., Liu, F., Rivera, M. P., Barr, J., Blum, E. S., Parker, E., Tipton, J. H., Varnedoe, J., Dutta, B., Lively, R. P., and Ng, N. L.: Evaluation of particle filtration efficiency of commercially available materials for homemade face mask usage, *Aerosol Sci. Technol., Aerosol Sci. Technol.*, 55, 930-942, 2021. (2)
  - (2) Rivera-Rios, J. C., Joo, T., Takeuchi, M., Orlando, T. M., Bevington, T., Mathis, J. W., Pert, C. D., Tyson, B. A., Anderson-Lennert, T. M., Smith, J. A., and Ng, N. L.: In-flight particulate matter concentrations in commercial flights are likely lower than other indoor environments, *Indoor Air*, doi.org/10.1111/ina.12812, 2021.
  - (3) T., Rivera-Rios, J. C., Alvarado-Velez, D., Westgate, S., and Ng, N. L.: Formation of Oxidized Gases and Secondary Organic Aerosol from a Commercial Oxidant-Generating Electronic Air Cleaner, *Environmental Science & Technology Letters*, 10.1021/acs.estlett.1c00416, 2021.
  - (4) McNeill, V. F., Corsi, R., Huffman, J. A., King, C., Klein, R., Lamore, M., Maeng, D. Y., Miller, S. L., Lee Ng, N., Olsiewski, P., Godri Pollitt, K. J., Segalman, R., Sessions, A., Squires, T., and Westgate, S.: Room-level ventilation in schools and universities, 10.26434/chemrxiv-2021-srffp, ChemRxiv, 2021. (now in *Atmospheric Environment: X*, 13, 100152, <https://doi.org/10.1016/j.aea.2022.100152>)

*Committee: Min Zhou, Chair (ME), Phanish Suryanarayana (CEE), Meilin Liu (MSE), Eric Vogel (MSE/IMat), Zeb Rocklin (PHYS)*

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

- Samuel Coogan, Assistant Professor and Demetrius T. Paris Junior Professor, School of Electrical and Computer Engineering, School of Civil and Environmental Engineering
- Diyi Yang, Assistant Professor, School of Interactive Computing

*Committee: Meisha Shofner, Chair (MSE), Martin P. Mourigal (Phys), William Ratcliff (BioSci), Matthew McDowell (ME), Jianjun Shi (ISYE)*

## STUDENT AWARDS

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

- Bachir El Fil, Woodruff School of Mechanical Engineering, Advisor: Srinivas Garimella  
Title: Waste heat recovery, thermal energy storage, and heat pumping in drying processes
- Steven J. Frey, School of Chemical and Biomolecular Engineering, Advisor: Ravi Kane  
Title: Engineering viral protein antigens to direct the humoral immune response to conserved epitopes
- Yuchen He, School of Mathematics, Advisor: Sung Ha Kang  
Title: Mathematical and data-driven pattern representation with applications in image processing, computer graphics, and infinite dimensional dynamical data mining
- Daniela Hurtado-Lange, The H. Milton Stewart School of Industrial and Systems Engineering, Advisor: Siva Theja Maguluri  
Title: Asymptotic analysis of single-hop stochastic processing networks using the drift method
- Pan Liu, School of Earth and Atmospheric Sciences, Advisor: Yuanzhi Tang  
Title: Speciation and recovery of rare earth elements (REES) from coal fly ash
- Emily K. McGuinness, School of Materials Science and Engineering, Advisor: Mark D. Losego  
Title: Vapor phase infiltration: sorption thermodynamics, chemical entrapment mechanisms, and hybrid material structure-property relations
- Aravindh Rajan, Woodruff School of Mechanical Engineering, Advisor: Shannon K. Yee  
Title: Conceptualization, thermodynamics, kinetics, and prototyping of continuous electrochemical refrigeration
- Suttipong Suttapitugsakul, School of Chemistry and Biochemistry, Advisor: Ronghu Wu  
Title: MS-based chemical proteomics studies of extracellular glycoproteins: identification, quantification, and dynamics
- Panni Wang, School of Electrical and Computer Engineering, Advisor: Shimeng Yu  
Title: Investigating ferroelectric and metal-insulator phase transition devices for neuromorphic computing
- Jianfeng Zhou, School of Civil and Environmental Engineering, Advisor: Xing Xie  
Title: System and process design of the locally enhanced electric field treatment (LEEFT) for water disinfection

*Committee: Nian Liu, Chair (ChBE), Jerry Qi (ME), Arash Yavari (CEE), Wenshan Cai (ECE), Claudio Di Leo (AE), Roshan Joseph (ISyE), Julia Babensee (BME), Yuhang Wang (EAS)*

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

- Charles Ross Lindsey, School of Biological Sciences, Advisor: Frank Rosenzweig  
Title: Phylotranscriptomics points to multiple independent origins of multicellularity and cellular differentiation in the Volvocine algae
- Thomas Pho, School of Chemical and Biomolecular Engineering, Advisor: Julie A. Champion  
Title: Surface Engineering of Protein Nanoclusters to overcome mucus barriers

*Committee: Marta Hatzell, Chair (ME), Edmond Chow (CSE), Rampi Ramprasad (MSE), Julian Rimoli (AE)*

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

- James Bamford, School of Materials Science and Engineering, Advisor: Mark D. Losego
- Kevin McCoy, Wallace H. Coulter Department of Biomedical Engineering, Advisor: Cassie S. Mitchell

*Committee: Antonia Antoniou, Chair (ME), Nga Lee (Sally) Ng (ChBE, EAS), and Seung Soon Jang (MSE)*