

Ahmad Vasel-Be-Hagh (Vaselbehagh)

Associate Professor of Mechanical Engineering,
University of South Florida¹
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EDUCATION

Postdoc	Ocean Engineering	University of Delaware	US	2015-2017
Ph.D.	Mechanical Engineering	University of Windsor	Canada	2011-2015
M.Sc.	Mechanical Engineering	Ferdowsi University	Iran	2008-2011
B.Sc.	Mechanical Engineering	Ferdowsi University	Iran	2004-2008

PROFESSIONAL APPOINTMENTS

2025–, Aerospace Engineering Program Director, University of South Florida
2024–, Associate Professor, Mechanical & Aerospace Engineering, University of South Florida
2023, Associate Professor, Mechanical & Nuclear Engineering, Tennessee Tech University
2017–2023, Assistant Professor, Mechanical & Nuclear Engineering, Tennessee Tech University
2022, Adjunct Professor, Engineering, East Tennessee State University
2019–2020, Adjunct Professor, Engineering, East Tennessee State University

GRANTS AWARDED (\$2,915,394)

Current (\$1,838,981)

University of South Florida

1. PI (Co-PIs: Tansel Yucelen, Arman Sargolzaei, Sonya Tiomkin), “The First AI-Controlled Gust Wind Tunnel for Testing in Challenging Environments,” 07/2026-06/2028, Emil Buehler Perpetual Trust, \$500,000.
2. PI (Co-PIs: Yogi Goswami, Arman Sargolzaei), “Management of Unwanted Vegetation at Solar Power Plants: A Feasibility Study,” 07/01/2025-06/30/2026, Tampa Electric Company (TECO) and Florida High Tech Corridor, \$202,006.
3. PI, “Deicing Condensers using Robot-Operated CO2 Lasers,” 01/2024- 01/2026, Tennessee Valley Authorities (TVA), \$338,450.
4. Co-PI (PI: Rory Roberts at Tennessee Tech University, Other Co-PIs: Bruce Jo, Michael Sumption, John Hull, Don Cao, Mohammed Akbar, John Kim, Roland Dixon, and Mike Ikeda), “CarbonLess Electric AviatioN (CLEAN),” 05/2023-04/2027, NASA, \$7,999,452 (5.56% share).
5. PI, “NSF CAREER: CAS-Climate: Understanding Thermal Transport Processes in Atmospheric Boundary Layer with Utility-Scale Solar Photovoltaic Plants,” 07/2022-06/2027, National Science

¹ 4202 E. Fowler Avenue, Tampa, FL 33620, USA

Foundation (NSF), \$380,442.

Past (\$1,076,413)

Tennessee Tech University

1. PI, "NSF CAREER: CAS-Climate: Understanding Thermal Transport Processes in Atmospheric Boundary Layer with Utility-Scale Solar Photovoltaic Plants," 07/2022-06/2027, National Science Foundation (NSF), \$500,493 (76% transferred to USF).
2. Co-PI (PI: Rory Roberts at Tennessee Tech University, co-PIs: Bruce Jo, Michael Sumption, John Hull, Don Cao, Mohammed Akbar, John Kim, Roland Dixon, and Mike Ikeda), "CarbonLess Electric Aviation (CLEAN)," 05/2023-04/2027, NASA, \$7,999,452 (5.56% share) (94% transferred to USF).
3. Senior Personnel (PI: Holly Stretz), "Fiber Reactor Extraction Simulations," 08/2022- 07/2024, Visionary Fiber Technologies, \$75,051 (6% share)
4. Senior Personnel (PI: Ping Chen, co-PIs: Joseph Ojo, Jie Cui, Steven Anton, and Nan Chen), "Second-life Battery in Mobile E.V. Charging Application for Rural Transportation (SMART)," 05/2023-04/2027, U.S. Department of Energy (DOE), \$4,531,642 (3% share)
5. Principal Investigator (co-PI: Charles Van Neste), "High-Precision Heat Delivery to Partly Melt Inaccessible Ice at a Nuclear Plant's Condenser," 01/2023-10/2023, Tennessee Valley Authorities (TVA), \$277,975.
6. Principal Investigator (co-PI: Satish Mahajan), "Thermal Treatment of Nuclear Plants' Ice Condensers using CO₂ Lasers," 01/2022-12/2022, TVA, \$250,000.
7. Principal Investigator, "Developing an Experimental Setup to Demonstrate the First and Second Laws of Thermodynamics," 06/2021-05/2022, Tennessee Tech's College of Engineering, \$11,000.
8. Principal Investigator, "Faculty Research Award: Understanding and Modeling of Thermal Transport Processes within Near-Ground Atmosphere in the Presence of Utility-Scale Solar," 06/2020-06/2021, Tennessee Tech University's Research Office, \$10,000.
9. Principal Investigator (co-PI: Satish Mahajan), "Development of a Laser-Based System for the Maintenance of Ice Condensers," 09/2020-12/2021, TVA, \$185,000.
10. Co-PI (PI: Cristina Archer), "Advanced Wake Loss Modeling for Large Wind Farms with Variable Wind Speed and Direction," 2019-2020, U.S. Department of Interior, \$186,244 (11% share)
11. Principal Investigator, "Investigating the Impact of Wind Turbines on Surface Fluxes using Computational Fluid Dynamics," 2019-2020, HKF Technologies LLC, \$10,619.

University of Delaware

12. Principal Investigator, "Investigating the Impact of Wind Turbines on Surface Fluxes using Computational Fluid Dynamics," 2016, First State Marine Wind LLC, \$45,076.

SELECTED AWARDS, HONORS ---

Tennessee Tech University

- 2024 Wings Up 100
- 2023 Brown-Henderson Outstanding Faculty Award
- 2023 Wings Up 100
- 2022 Wings Up 100
- 2021 ASME Distinguished Researcher, ASME Student Chapter, Tennessee Tech University
- 2021 Wings Up 100
- 2020: ASME Outstanding Advisor

University of Windsor

- 2016 T&E Theorist, Turbulence and Energy Laboratory, University of Windsor
- 2015 Mitacs-Accelerate Internship Award (\$21,000), Mitacs, Canada
- 2015 Innovative Researcher, Turbulence and Energy Laboratory, University of Windsor
- 2014 Prolific Scientific Writer, Turbulence and Energy Laboratory, University of Windsor
- 2013 Graduate Student Award, 24th Canadian Congress of Applied Mechanics, Saskatoon, Canada
- (2011–2015) Ontario Trillium Scholarship (\$160,000), Government of Ontario, Canada
- 2011 Doctoral Entrance Scholarship (\$6,000), University of Windsor, Canada

Ferdowsi University

- 2009 Outstanding Mechanical Engineering Researcher, Ferdowsi University Research Foundation

AREAS OF EXPERTISE ---

Research

Energy, Aerodynamics, Computational Fluid Dynamics, Atmospheric Fluid Mechanics, Computational and Experimental Thermal Transport Processes

Teaching

University of South Florida

Turbulence – Fall 2025

Propulsion – Spring 2025, Spring 2024

Fluid Systems – Fall 2024

Tennessee Technological University

Turbulence – Fall 2023, Fall 2021

Atmospheric Fluid Mechanics – Fall 2022, Spring 2021

Fluid Mechanics – Spring 2022, Fall 2021, Fall 2020, Spring 2020, Spring 2019, Fall 2018 (two sections), Spring 2018, Fall 2017

Intermediate Fluid Mechanics – Fall 2023, Fall 2020

Aerodynamics of Damaged Wings – Spring 2020 and Fall 2021

Modeling Atmospheric Flows – Spring 2023

Atmospheric Measurements – Fall 2022

Thermodynamics I – Spring 2023, Fall 2022, Spring 2021, Spring 2020, and Fall 2019

Conduction Heat Transfer – Spring 2022 and Fall 2019

Phase Change Flows – Spring 2023 and Spring 2021

Integrated Storage Technologies – Fall 2019

East Tennessee State University

Thermodynamics I – Fall 2022 and Fall 2019

Fluid Mechanics – Spring 2022 and Spring 2020

PUBLICATIONS

Graduate students are indicated by an **asterisk ***.

Undergraduate students are indicated by a **dagger †**.

The corresponding author's name is underlined.

Thesis/Dissertation

David S.-K. Ting and Rupp Carriveau (Advisors). “Hydrodynamics of an Underwater Compressed Air Energy Storage Plant,” Doctoral dissertation, University of Windsor (Canada), May 2015.

Javad Abolfazli Esfahani (Advisor). “Lattice Boltzmann Simulation of Flow over Circular Bluff Bodies,” Master of Science thesis, Ferdowsi University (Iran), August 2011.

Books

1. Vasel-Be-Hagh, A., & Ting, D. (Editors). 2021. “Utility-scale Wind Turbines and Wind Farms,” The Institution of Engineering and Technology (IET), London, UK. [10.1049/PBPO171E](https://doi.org/10.1049/PBPO171E)
2. Vasel-Be-Hagh, A., & Ting, D. (Editors). 2020. “Environmental Management of Air, Water, Agriculture, and Energy,” Routledge, Taylor and Francis, FL, USA. <https://doi.org/10.1201/9780429196607>
3. Vasel-Be-Hagh, A., & Ting, D. (Editors). 2019. “Advances in Sustainable Energy,” Springer, Switzerland. <https://doi.org/10.1007/978-3-030-05636-0>

Published Chapters

4. Roland*, D., & Vasel-Be-Hagh, A. (2025). Chapter 9: A Prerequisite to Computational Fluid Dynamics of Airplane Condensation Trials. In: Stagner, J., Ting, D.S.-K. (Eds.), *Renewable Energy Systems: The Way Forward*. IOP Publishing. <https://dx.doi.org/10.1088/978-0-7503-6179-8ch9>
5. Cannon*, T., & Vasel-Be-Hagh, A. (2025). Chapter 4: Measuring Heat Flux at Solar Photovoltaic Plants. In: Stagner, J., Ting, D.S.-K. (Eds.), *Renewable Energy Systems: The Way Forward*. IOP Publishing. <https://dx.doi.org/10.1088/978-0-7503-6179-8ch4>
6. Hagan*, T., & Vasel-Be-Hagh, A. (2024). Chapter 5: A Preliminary Investigation of Three-Phase Homogeneous Boiling. In: Ting, D.S.-K., Vasel-Be-Hagh, A. (Eds.), *Brightening Tomorrow Together 2024: Springer Proceedings in Energy* (pp. 93-102). Cham, USA: Springer.

https://doi.org/10.1007/978-3-031-73486-1_5

7. Hosseini*, A., Cannon*, D.T., Vassel-Be-Hagh, A. (2023). Chapter 11: Real-Time Optimization of Yaw Angle and Tip-Speed Ratio for a Six-Turbine Plant of NREL 5-MW Wind Turbine. In: Ting, D.S.-K., Vassel-Be-Hagh, A. (Eds.), *Engineering to Adapt: Springer Proceedings in Energy* (pp.217-226). Cham, USA: Springer. https://doi.org/10.1007/978-3-031-47237-4_11
8. Hackler*, M., Vassel-Be-Hagh, A., & Ting, D. (2021). Chapter 1: The Current Status of Wind Power. In: A. Vassel-Be-Hagh & D. Ting (Eds.), *Utility-Scale Wind Turbines and Wind Farms* (pp. 1-15). London, UK: The Institute of Engineering and Technology. [10.1049/pbpo171e_ch1](https://doi.org/10.1049/pbpo171e_ch1)
9. Unser†, L., & Vassel-Be-Hagh, A. (2021). Chapter 3: Scaling Utility-Scale Wind Turbines. In: A. Vassel-Be-Hagh & D. Ting (Eds.), *Utility-Scale Wind Turbines and Wind Farms* (pp. 39- 47). London, UK: The Institute of Engineering and Technology. [10.1049/PBPO171E_ch3](https://doi.org/10.1049/PBPO171E_ch3)
10. Unser†, L., & Vassel-Be-Hagh, A. (2020). Chapter 10: A Preliminary Evaluation on the Performance of Diffuser-augmented Vertical Axis Wind Turbines. In: A. Vassel-Be-Hagh & D. Ting (Eds.), *Complementary Resources for Tomorrow* (pp. 163-174). Switzerland: Springer Nature. [10.1007/978-3-030-38804-1_10](https://doi.org/10.1007/978-3-030-38804-1_10)
11. Long*, C.S., & Vassel-Be-Hagh, A. (2020). Chapter 6: Storage-Integrated Energy Harvesters. In: A. Vassel-Be-Hagh & D. Ting (Eds.), *Environmental Management of Air, Water, Agriculture, and Energy* (pp. 119-140). Boca Raton, FL, USA: Routledge. [10.1201/9780429196607](https://doi.org/10.1201/9780429196607)
12. Vassel-Be-Hagh, A. (2017). Chapter 3: Optimization of wind farms for communities. In: A. Vassel-Be-Hagh & D. Ting (Eds.), *Wind and Solar Based Energy Systems for Communities* (pp. 27- 61), London, UK: The Institute of Engineering and Technology. [10.1049/PBPO130E_ch3](https://doi.org/10.1049/PBPO130E_ch3)

Published Peer-Reviewed Journal Articles

13. Bohlken*, T., Hagan, T., Vassel-Be-Hagh, A., & Takshi, A. (2026). “Photovoltaic Plant Losses: Spectral Mismatch,” *Energy Materials*, conditionally accepted.
14. Shahrouri†, K., Tolba*, A., Doranehgard, M.H., & Vasselbehagh, A. (2026). “Optical Losses in Photovoltaic Solar Panels: Mechanisms, Modeling Approaches, and Mitigation Strategies,” *Thermal Science and Engineering Progress*, 71, 104557, <https://doi.org/10.1016/j.tsep.2026.104557>.
15. Roland*, D. & Vassel-Be-Hagh, A., (2026). “The Effect of Air Moisture on the Energy Transfer Rate via a 10.6-m Infrared Laser Beam,” *Applied Thermal Engineering*, 289, 129871. <https://doi.org/10.1016/j.applthermaleng.2026.129871>
16. Ayeni*, O.O., Stretz, H.A., & Vassel-Be-Hagh, A., (2025). “Effects of Fiber Arrangement on Flow Characteristics Along a Four-Fiber Element of Fiber Extractors,” *Micromachines*, 16 (4), 425, 2025. <https://doi.org/10.3390/mi16040425>
17. Medlin†, R., Meeks†, S., Vassel-Be-Hagh, A., Damazo, J., & Roberts, R. (2025). “Ammonia versus Kerosene Contrails: A Review,” *Progress in Aerospace Sciences*, 153, 101074. <https://doi.org/10.1016/j.paerosci.2024.101074>
18. Hagan*, T. & Vassel-Be-Hagh, A. (2025). “Homogeneous boiling over melting ice,” *Scientific Reports* 15 (1): 198. <https://doi.org/10.1038/s41598-024-84470-5>
19. Hosseini*, A., Cannon*, D.T., & Vassel-Be-Hagh, A., (2025). “Wind farm active wake control

via concurrent yaw and tip-speed ratio optimization,” *Applied Energy*, 377:124625.

<https://doi.org/10.1016/j.apenergy.2024.124625>

20. Cannon*, T., Hagan*, T., Kramer, T., Schafer, D., Meeks†, S., Medlin†, R., Roland*, D., Vasel-Be-Hagh, A., & Roberts, R. (2024). “Thermodynamic evaluation of contrail formation from a conventional jet fuel and an ammonia-based aviation propulsion system,” *Communications Engineering*, 3, 165. <https://doi.org/10.1038/s44172-024-00312-2>
21. Cannon*, D.T., Vasel-Be-Hagh, A. (2024). “Daytime thermal effects of solar photovoltaic systems: Field measurements,” *Journal of Renewable and Sustainable Energy*, 16: 056501. <https://doi.org/10.1063/5.0219179>
22. Ayeni*, O.O., Stretz, H.A., & Vasel-Be-Hagh, A., (2024). “A Core Element CFD Model for a Two-Phase Microfluidic Fiber Extractor,” *Chemical Engineering and Processing: Process Intensification*, 202: 109842. <https://doi.org/10.1016/j.cep.2024.109842>
23. Nouri*, R., Vasel-Be-Hagh, A. (2024). “Deciphering unknown upstream conditions and downstream turbulent flow evolution via neural networks,” *Ocean Engineering*, 297, 116977. <https://doi.org/10.1016/j.oceaneng.2024.116977>
24. Ma, Y., Archer, C.L., & Vasel-Be-Hagh, A. (2022). “The Jensen wind farm parameterization,” *Wind Energy Science*, 7, 2407–2431. [10.5194/wes-7-2407-2022](https://doi.org/10.5194/wes-7-2407-2022)
25. Ma, Y., Archer, C.L., & Vasel-Be-Hagh, A. (2022). “Comparison of individual versus ensemble wind farm parameterizations inclusive of sub-grid wakes for the WRF model,” *Wind Energy*, 25(9), 1573–1595. [10.1002/we.2758](https://doi.org/10.1002/we.2758)
26. Hosseini*, A., Cannon*, D.T., & Vasel-Be-Hagh, A. (2022). Tip Speed Ratio Optimization: More Energy Production with Reduced Rotor Speed. *Wind.* 2(4), 691 – 710. [10.3390/wind2040036](https://doi.org/10.3390/wind2040036)
27. Hackler*, M., Vasel-Be-Hagh, A., & Pardue, B. (2022). On the Effect of Reynolds number and Structural Parameters on Vortex-Induced Vibrations. *International Journal of Fluid Mechanics Research*, 49(4), 17-30. [10.1615/InterJFluidMechRes.2022042820](https://doi.org/10.1615/InterJFluidMechRes.2022042820)
28. Nash*, R., Nouri*, R., & Vasel-Be-Hagh, A. (2021). “Wind Turbine Wake Control Strategies: A Review and Concept Proposal,” *Energy Conversion and Management*, 245, 114581. [10.1016/j.enconman.2021.114581](https://doi.org/10.1016/j.enconman.2021.114581)
29. Nouri*, R., Vasel-Be-Hagh, A., & Archer, C. (2020). “The Coriolis Force and the Direction of Rotation of the Blades Significantly Affect the Wake of Wind Turbines,” *Applied Energy*, 277, 115511. [10.1016/j.apenergy.2020.115511](https://doi.org/10.1016/j.apenergy.2020.115511)
30. Archer, C.L., & Vasel-Be-Hagh, A. (2020). Corrigendum to “Review and Evaluation of Wake Loss Models for Wind Energy Applications,” [*Applied Energy* 226 (2018) 1187–1207].
31. Archer, C.L., & Vasel-Be-Hagh, A. (2019). “Wake Steering via Yaw Control in Multi-Turbine Wind Farms: Recommendations based on Large-Eddy Simulation,” *Sustainable Energy Technologies and Assessments*, 33, 34-43. [10.1016/j.seta.2019.03.002](https://doi.org/10.1016/j.seta.2019.03.002)
32. Dittner*, M.E., & Vasel-Be-Hagh, A. (2019). “Advances in Wind Power Forecasting,” *Lecture Notes in Energy*, 70, 37-57. [10.1007/978-3-030-05636-0_3](https://doi.org/10.1007/978-3-030-05636-0_3)
33. Archer, C.L., Wu, S., Vasel-Be-Hagh, A., Brodie, J.F., Delgado, R., St. Pe, A., Oncley, S., &

Semmer, S. (2019). "The VERTEX field campaign: observations of near-ground effects of wind turbine wakes," *Journal of Turbulence*, 20, 64-92. [10.1080/14685248.2019.1572161](https://doi.org/10.1080/14685248.2019.1572161)

34. Zhang, W., Maleki, A., Gholipour Khajeh, M., Zhang, Y., Mortazavi, S.M., & Vassel-Be-Hagh, A. (2019). "A Novel Framework for Integrated Energy Optimization of a Cement Plant: An Industrial Case Study," *Sustainable Energy Technologies and Assessments*, 35, 245-256. [10.1016/j.seta.2019.06.001](https://doi.org/10.1016/j.seta.2019.06.001)

35. Archer, C.L., Vassel-Be-Hagh, A., Wu, S., Pan, Y., Yan, C., Brodie, J.F., & Maguire, E. (2018). "Review and Evaluation of Wake Loss Models for Wind Energy Applications," *Applied Energy*, 226, 1187-1207. [10.1016/j.apenergy.2018.05.085](https://doi.org/10.1016/j.apenergy.2018.05.085)

36. Vassel-Be-Hagh, A., & Iakovidis, F. (2017). "The Effect of Wind Direction on the Performance of Solar PV Plants," *Energy Conversion and Management*, 153, 455-461. [10.1016/j.enconman.2017.09.077](https://doi.org/10.1016/j.enconman.2017.09.077)

37. Vassel-Be-Hagh, A., & Archer, C. (2017). "Wind Farm Hub Height Optimization," *Applied Energy*, 195C, 905-921. [10.1016/j.apenergy.2017.03.089](https://doi.org/10.1016/j.apenergy.2017.03.089)

38. Vassel-Be-Hagh, A., & Archer, C. (2017). "Wind Farms with Counter-Rotating Wind Turbines," *Sustainable Energy Technologies and Assessments*, 24, 19-30. [10.1016/j.seta.2016.10.004](https://doi.org/10.1016/j.seta.2016.10.004)

39. Vassel-Be-Hagh, A., Carriveau, R., Ting, D.S.-K., & Turner, J.S. (2015). "Drag of Buoyant Vortex Rings," *Physical Review E*, 92(4), 1-5. [10.1103/PhysRevE.92.043024](https://doi.org/10.1103/PhysRevE.92.043024)

40. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2015). "A Balloon Bursting Underwater," *Journal of Fluid Mechanics*, 769, 522 – 540. [10.1017/jfm.2015.126](https://doi.org/10.1017/jfm.2015.126)

41. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2015). "Flow over Submerged Energy Storage Balloons in Closely and Widely Spaced Floral Configurations," *Ocean Engineering*, 95, 59 – 77. [10.1016/j.oceaneng.2014.11.030](https://doi.org/10.1016/j.oceaneng.2014.11.030)

42. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2015). "Structural Analysis of an Underwater Energy Storage Accumulator," *Sustainable Energy Technologies and Assessments*, 11, 165 - 172. [10.1016/j.seta.2014.11.004](https://doi.org/10.1016/j.seta.2014.11.004)

43. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2014). "Flow past an Accumulator Unit of an Underwater Energy Storage System: Three Touching Balloons in Floral Configuration," *Journal of Marine Science and Application*, 13(4): 467 – 476. [10.1007/s11804-014-1277-3](https://doi.org/10.1007/s11804-014-1277-3)

44. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2014). "Underwater Compressed Air Energy Storage Improved through Vortex Hydro Energy," *Sustainable Energy Technologies and Assessments*, 7, 1 – 5. [10.1016/j.seta.2014.02.001](https://doi.org/10.1016/j.seta.2014.02.001)

45. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2013). "Numerical Simulation of Flow past an Underwater Energy Storage Balloon," *Computers and Fluids*, 88, 272 – 286. [10.1016/j.compfluid.2013.09.017](https://doi.org/10.1016/j.compfluid.2013.09.017)

46. Vassel-Be-Hagh, A., Carriveau, R., & Ting, D.S.-K. (2013). "Energy Storage using Weights Hydraulically Lifted above Ground," *International Journal of Environmental Studies*, 70(5), 792 – 799. [10.1080/00207233.2013.810043](https://doi.org/10.1080/00207233.2013.810043)

47. Vassel-Be-Hagh, A., Ting, D.S.-K., & Carriveau, R. (2013). "Correlating Flow Pattern with Force Coefficients in Air Flow past a Tandem Unit of Three Circular Cylinders," *International Journal of Fluid Mechanics Research*, 40(3), 235–253.

[10.1615/InterJFluidMechRes.v40.i3.40](https://doi.org/10.1615/InterJFluidMechRes.v40.i3.40)

48. Esfahani, J.A., & Vasel-Be-Hagh, A. (2013). “A Numerical Study on Shear Layer Behavior in Flow over a Square Unit of Four Cylinders at Reynolds Number of 200 using the Lattice Boltzmann Method,” *Progress in Computational Fluid Dynamics*, 13(4), 103 – 119.
[10.1504/PCFD.2013.052425](https://doi.org/10.1504/PCFD.2013.052425)
49. Esfahani, J.A., & Vasel-Be-Hagh, A. (2012). “LB Simulation of Heat Transfer in Flow past a Square Unit of Four Isothermal Cylinders,” *Comptes Rendus Mecanique*, 340(7), 526 – 535.
[10.1016/j.crme.2012.03.011](https://doi.org/10.1016/j.crme.2012.03.011)

Conferences

50. Vanderlan*, S., Vasel-Be-Hagh, A., & Cui, J. (2025, March 9-12). *Computational Fluid Dynamics Model of Heat Transfer in the Vicinity of Photovoltaic Panels* [paper presentation]. 10th Thermal and Fluids Engineering Conference: Washington, DC, USA.
51. Hagan*, T. & Vasel-Be-Hagh, A. (2024, June 20). *Homogenous Boiling Above-Ice-Liquid Interface* [paper presentation]. Brightening Tomorrow Together: Windsor, Canada.
52. Medlin†, R., Meeks†, S., & Vasel-Be-Hagh, A. (2024, June 20). *On the Contrails of Hydrogen-Powered Airplanes* [paper presentation]. Brightening Tomorrow Together: Windsor, Canada.
53. Jo, B., Saha, A., Akbar, M., Rahman, M.M., Barrit*, E., Vasel-Be-Hagh, A., & Kim, T. (2024, July 29 – August 2). *Towards the Conversion to Electrified Commercial Aircraft, the Boeing 737 Max 800 Field Data Analysis* [paper presentation]. AIAA Aviation Forum: Las Vegas, NV, United States.
54. Gong, M., Vasel-Be-Hagh, A., Tharpe, A. & Roberts, R. (2024, July 29 – August 2). *Preliminary Hazard Identification and Risk Assessment for Liquid Ammonia Fuel Safety in Zero-Emission Fuel-Cell-Hybrid Electric Aircraft* [paper presentation]. AIAA Aviation Forum: Las Vegas, NV, United States.
55. Nouri*, R., Vasel-Be-Hagh, A., Foti, D. (2024, April 21-24). *The Effect of Latitude on Wind Farm Power Generation* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
56. Roland*, D. & Vasel-Be-Hagh, A. (2024, April 21-24). *Exploring the Influence of Relative Humidity and Temperature on CO₂ Laser Beams* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
57. Hagan*, T. & Vasel-Be-Hagh, A. (2024, April 21-24). *Enhanced Thermocavitation via Impeded Convection and Instabilities Induced by Temperature and Pressure Gradients* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
58. Cannon*, D.T. & Vasel-Be-Hagh, A. (2024, April 21-24). *Improving Heat Flux Measurement Accuracy in Solar Farm Environmental Studies: A Corrective Equation Approach* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
59. Sims*, W. & Vasel-Be-Hagh, A. (2024, April 21-24). *Exploring the Thermal Effects of Utility-Scale Photovoltaic Integration on Atmospheric Boundary Layer: Insights from a Field Campaign* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
60. Hosseini, A. & Vasel-Be-Hagh, A.R. (2023, June 22-23). *Instantaneous Real-Time Control of Tip Speed Ratio and Yaw for Wind Farms* [paper presentation]. Engineering to Adapt: Windsor,

Ontario, Canada.

61. Hagan*, T., Roland*, D., Hill, T., & Vasel-Be-Hagh, A. (2023, June 22-23). Precise Remote Heat Delivery for Thermal Treatment of a Nuclear Plant's Condensers. Engineering to Adapt: Windsor, Ontario, Canada.
62. Hosseini, A., Cannon*, T., & Vasel-Be-Hagh, A.R. (2022, September). *Active Tip Speed Ratio Control Can Significantly Increase Annual Energy Production* [paper presentation]. The North American Wind Energy Academy Conference: Delaware, USA.
63. Nouri*, R., Nash*, R., & Vasel-Be-Hagh, A.R. (2022, June 23-24). *Wind Turbine Wake Redirection via External Vanes* [paper presentation]. Responsible Engineering & Living Symposium: Windsor, Canada.
64. Nouri*, R. & Vasel-Be-Hagh*, A.R. (2019, June 20-21). *Negative yaw versus positive yaw: the impact of Coriolis or the direction of rotation of the blades* [paper presentation]. Energy and Resources for Tomorrow: Windsor, Ontario, Canada.
65. Vasel-Be-Hagh, A. & Archer, C. (2016, December). *Hub Height Optimization to Increase Energy Production of Wind Farms*. American Geophysical Union (AGU) Fall Meetings: San Francisco, California, USA.
66. Vasel-Be-Hagh, A., Carriveau, R., & Ting, D. S.-K. (2014, July). *Flow-Induced Vibrations of an Underwater Energy Storage Accumulator*. Offshore Energy and Storage Symposium (OSES): Windsor, Ontario, Canada.
67. Vasel-Be-Hagh, A., Carriveau, R., & Ting, D. S.-K. (2013, June 2-6). *Flow past an Isolated Underwater Balloon* [paper presentation]. Canadian Congress of Applied Mechanics (CANCAM): Saskatoon, Canada.
68. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2011). *Employment of Lattice Boltzmann Method in Simulating Flow past Two Equal Diameter Cylinders* [paper presentation]. Saudi Engineering Conference (SEC 8): Buraydah, Saudi Arabia.
69. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2011, March). *A Lattice Boltzmann Study of Flow Past Moderately and Widely Spaced Units of Four Cylinders: Flow Structure Simulation* [paper presentation]. Iranian Aerospace Society International Conference: Tehran, Iran.
70. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2010, July 12-14). *A Lattice Boltzmann Simulation of Crossflow Around Four Cylinders in a Square Arrangement* [paper presentation]. Proceedings of the ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis: Istanbul, Turkey.
71. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2009, March). *Studying the Lattice Boltzmann Method by Simulating Couette Flow* [paper presentation]. Iranian Aerospace Society International Conference: Isfahan, Iran.

OTHER INVITED TALKS/SEMINARS

Atmospheric Thermofluids: Unraveling Aerospace and Renewable Energy Effects

2023 *Department of Mechanical and Aerospace Engineering, University of South Florida*

Clean Energy: Our Commitment to a Sustainable Future

2023 *Department of Mechanical and Aerospace Engineering, University at Buffalo,*

Modeling Atmospheric Thermal and Momentum Transport Processes using Computational

Fluid Dynamics

2023 CEE Distinguished Seminar Series, Northeastern University

Wind Farm Layout Optimization

2017 University of Windsor, Windsor, ON, Canada

Wind Energy Conversion and Storage

2016 Northern Illinois University, Dekalb, IL

Wind Energy Conversion and Storage

2016 Tennessee Tech University, Cookeville, TN

POST-DOCTORAL RESEARCH ASSOCIATES

1. Ty Hagan, University of South Florida, 2024 – present
2. Mohammad Hossein Doranehgard, University of South Florida, 2025 – present
3. Mohamed Abbasi, University of South Florida, 2025 – present

STUDENTS ADVISED/EVALUATED

Clubs

AIAA Student Chapter, University of South Florida, 2025 – present

ASHRAE Student Chapter, University of South Florida, 2025 – present

Men's Soccer Club, Tennessee Tech University, 2018 - 2023

Ph.D. Dissertation in Progress

University of South Florida

4. Torge Bohlken	Fall 2025 –	Sponsor: NSF
5. Abdo Ashraft	Fall 2025 –	Sponsor: NASA
6. Ahmed Gamal Tolba	Fall 2024 –	Sponsor: NSF
7. Michael Edgemon	Fall 2024 –	Sponsor: NSF
8. Devin Roland	Spring 2024 –	Sponsor: NASA
9. Elijah Barritt	Fall 2023 –	Sponsor: NASA

Ph.D. Dissertations Directed

Tennessee Tech University

10. **Scott Vanderlan** (2022–2025, Co-advisor: Jie Cui)
Sponsor: ORNL
Dissertation: “Computational Fluid Dynamics Model of Heat Transfer in the Vicinity of Photovoltaic Panels.”
Employed at the Oak Ridge National Laboratories (Scientist)

11. **Ty Hagan** (2021–2024)
Sponsor: TVA
Dissertation: “Thermal Cavitation Induced by Extreme Temperature Gradients.”
Employed at the University of South Florida (Postdoctoral Researcher)

12. **Daniel T Cannon** (2020–2024)
Sponsor: NSF
Dissertation: “Understanding the Impact of Photovoltaic Solar Panels on the

Near-Ground Atmosphere: A Pilot Study”

Employed at Tennessee Tech University (Postdoctoral Researcher)

13. Reza Nouri (2019–2023)

Dissertation: “The Need to Go Deeper: The Employment of Convolutional Neural Networks to Analyze Turbulent Flows Frequency Content,”

Employed at the University of Memphis (Postdoctoral Researcher)

14. Doug Clark (2018–2021)

Sponsor: ORNL

Dissertation: “Multiphysics-Modeling of Fire-Induced Uranium Aerosol Formation – A-Posteriori Benchmarking of Experiments,”

Employed at Oak Ridge National Laboratory (Scientist)

M.Sc. Theses Directed

15. Warren Sims, M.Sc., 2022-2024, “Design, Engineering, and Fabrication of a Weather Tower,” employed at Oak Ridge National Laboratory.
16. Devin Roland, M.Sc., 2022–2023, “Understanding the Impact of Humidity and Turbulence Intensity on the Direction and Intensity of an Infrared Beam,” employed at the University of South Florida (Ph.D. graduate assistant).
17. Michael Hackler, M.Sc., 2020–2021, “On the Effect of Reynolds Number and Structural Parameters on Vortex-Induced Vibrations of Circular Cylinders,” employed at Y-12 National Security Complex
18. Hollee Sadler, M.Sc., 2020–2021, “Aerodynamics of a Damaged Wing,” employed at the University of Central Florida (Ph.D. graduate assistant)
19. Cody Long, M.Sc., 2018–2020, “Vortex-Induced Vibrations of Oscillating Bluff Bodies for Energy Storage/Conversion Applications,” employed at Y12 National Security Complex
20. Ryan R Nash, M.Sc., 2018–2020, “Wind Farm Wake Control,” employed at Arnold Air Force Base
21. Madison Dittner, M.Sc., 2018–2020, “Development of a Geometry Optimization Platform Using an In-House Developed Genetic Algorithm: Case of a Bladeless Wind Turbine,” employed at U.S. Patent Office

Service on Advisory Committees Other than Own Advisees

University of South Florida

22. Majid Torof – Ph.D. in Civil Engineering, Advisor: Jeff Cunningham

Tennessee Tech University

23. Miles Nevills – Ph.D. in Mechanical Engineering, Advisor: Ethan Languri
24. Christopher Johnson – Ph.D. in Electrical Engineering, Advisor: Dr. Charles Van Neste
25. Musayyibi Shuaibu – Ph.D. in Electrical Engineering, Advisor: Dr. Joseph Ojo
26. Sainand Jadhav – Ph.D. in Manufacturing, Advisor: Dr. DuckBong Kim
27. Jimmy Meacham – M.Sc. in Mechanical Engineering, Advisor: Dr. Rory Roberts
28. Trevor Kramer – Ph.D. in Mechanical Engineering, Advisor: Dr. Rory Roberts
29. Saiful Islam – Ph.D. in Manufacturing, Advisor: Dr. DuckBong Kim
30. Seyi Ayeni – Ph.D. in Chemical Engineering, Advisor: Dr. Holly Stretz
31. Saanyol Igbax – Ph.D. in Mechanical Engineering, Advisor: Dr. Steve Idem
32. Chaitanya Kodali – Ph.D. in Mechanical Engineering, Advisor: Dr. Steve Idem

33. Jason Cook – Ph.D. in Mechanical Engineering, Advisor: Dr. Pingen Chen
34. Zhicheng Zhang – Ph.D. in Manufacturing, Advisor: Dr. Ismail Fidan
35. Mushrif Choudhury – Ph.D. in Mechanical Engineering, Advisor: Dr. Jie Cui
36. Mahdi Mohammadizade – Ph.D. in Manufacturing, Advisor: Dr. Ismail Fidan
37. Drew E. Winder – Ph.D. in Mechanical Engineering, Advisor: Dr. Sally Pardue
38. Tyler R. Qualls – M.Sc. in Mechanical Engineering, Advisor: Dr. Pingen Chen
39. Joseph Staller – M.Sc. in Mechanical Engineering, Advisor: Dr. Steve Idem
40. Byron Harrington – M.Sc. in Mechanical Engineering, Advisor: Dr. Rory Roberts
41. Michael Tidwell – M.Sc. in Mechanical Engineering, Advisor: Dr. Van Neste

University of Rhode Island

42. Boma Kresning – Ph.D. in Ocean Engineering, Advisor: Dr. Reza Hashemi

Undergraduate Research Assistants

University of South Florida

1. Sara Arroyave (2025 – present).
2. Kevin Ferrer Sanchez (2025 – present).
3. Mateo Acosta (2025 – present). “A Literature Survey on Aerodynamics Concepts for Enhancing Hybrid-Electric Propulsion Systems Performance”
4. Benjamin Mannino (2025 – present). “Simulating the drag coefficient of a low Earth orbit satellite using START-CCM.”
5. Andrew Drysdale (2025 – present). “Simulating the drag coefficient of a low Earth orbit satellite using ANSYS Fluent.”
6. Dexter Limcangco (2025 – present). “Verifying TSR Optimization’s Effectiveness on Wind Farm Energy Generation via Scaled Laboratory Experiments.”
7. Natalie Geer (2024 – present). “Laboratory Experiments to Understand Hydrogen vs. Kerosene Contrails.”
8. Isabella Ribaldo (2024 – present). “Verifying TSR Optimization’s Effectiveness on Wind Farm Energy Generation via Scaled Laboratory Experiments.”
9. Ebert Brits (2024 – present). “Setting up EULAG for simulating contrail effects.”
10. Karam Shahroui (2024 – present). “Solar Photovoltaic Losses.”
11. Stephanie Lue (Spring 2025). “A Literature Survey on Aerodynamics Concepts for Enhancing Hybrid-Electric Propulsion Systems Performance.”
12. Torge Bohlken (2024 – 2025) “Solar Photovoltaic Losses.”
13. Chiara Deangelis (2024). “Developing an Educational Mobile Application: ATMOSPORT.”

Tennessee Tech University

14. Ryan Medlin (2023 – 2024). “Condensation Trails of Hydrogen versus Kerosene: A Literature Review.”
15. Spencer Meeks (2023 – 2024), “Condensation Trails of Hydrogen versus Kerosene: A Literature Review.”
16. Jordan Frerichs (2022–2023). "Contributing to the Design of a Vertical Traverse System."

17. Brian Hawkins (2021–2022). “Wind Tunnel Laboratory Maintenance.”
18. Pierce Wooten (2021–2023). “Investigating the Impact of Turbulence and Humidity on Infrared Beam Power Transmission: A Literature Review,” (employed by Oak Ridge National Lab).
19. Luke Olson (2021–2023). “Designing and Fabricating a Wind Turbine Speed Controller,” (employed by Oak Ridge National Lab).
20. Koltar Houser (2021–2022). “Constructing a Steam Engine Setup for Investigating the First Law of Thermodynamics,” (employed by Designed Conveyor Systems, LLC).
21. Nathaniel Lee (2022). “Wind Tunnel Traverse Maintenance and Collaborating with the GSET R&D Team.”
22. Olivia Cline (2021). “Designing a Wind Turbine Speed Controller.”
23. William McCarty (2020–2021). “Designing an Interface for Simultaneous Visualization of CFD Simulations Conducted on an HPC Cluster.”
24. Wesley Upshur (2020–2021). “Harvesting Electricity from a Vehicle's Suspension System,” (employed by GE Aerospace).
25. Caleb Dunlap (2020–2021). “Harvesting Electricity from a Vehicle's Suspension System,” (currently a Ph.D. student at TN Tech)
26. Christophe Blair (2020–2021). “Harvesting Electricity from a Vehicle's Suspension System.”
27. Ty Hagan (2020–2021). “Generating CAD Files and 3D Printing Essential Components for Various Projects,” (currently a Ph.D. student at TN Tech).
28. Henry Pace (2020). “Modeling Linear-to-Rotary Conversion Mechanism using ANSYS,” (currently a Ph.D. student at Georgia Tech).
29. Stephen Foltz (2020). “Engineering an Underwater Energy Storage System,” (employed by National Aerospace Solutions).
30. Adam Becklehimer (2020). “Developing an AI-based Signal Classifier using Python,” (employed by Fast Enterprises, LLC).
31. Andrew Davis (2019 – 2020). “Performing a Comprehensive Literature Review on the Aerodynamics of Damaged Wings,” (graduate student at Colorado State University).
32. Logan Unser (2019 – 2020). “Scaling Wind Turbines for Wind Tunnel Testing,” (employed at QuEST Global).
33. Josh Nichols (2019 – 2020). “Aided in the Development of an Algorithm to Identify, Curve-fit, and Calculate Area under Peaks within Irregular Signals,” (employed at ProviderTrust)
34. John Stephenson (2018). “Contributed to the Fabrication of the Wind Tunnel's Traverse System.”
35. Trenton Preston (2018). “Designing and Fabricating a Vortex Gun.”
36. Yixing Wang (2021 – 2022). “Exploring the Aerodynamics of a Scaled Aircraft Under Damage Conditions,” (currently graduate student at Tennessee Tech University).
37. Benjamin Cooper (2019 and 2021). “Wind Turbine Speed Control.”

Special Achievements of Graduate Students

Tennessee Tech University

Michael Hackler	2023 Eminence Award for the M.Sc. Best Paper
Reza Nouri	2022 Best Mechanical Engineering Ph.D. Student Poster Award, Tennessee Tech's Research and Creative Inquiry Day
William McCarty	2021 Creative Inquiry Summer Experience (CISE) award, \$4,000
Reza Nouri	2021 Eminence Award for the Doctor of Philosophy Best Paper
Stephen Foltz	2020 Creative Inquiry Summer Experience (CISE) award, \$4,000
Logan Unser	2020 Creative Inquiry Summer Experience (CISE) award, \$4,000
Logan Unser	2019 Creative Inquiry Summer Experience (CISE) award, \$4,000
Trenton Preston	2018 Creative Inquiry Summer Experience (CISE) award, \$4,000

SERVICE

Editorial Records

Special Issues

“Advances in Photovoltaics,” Sustainable Energy Technologies and Assessments, Elsevier, 2023

“Tomorrow Energy & Resources,” Sustainable Energy Technologies and Assessments, Elsevier, 2021

“Future and Sustainability,” International Journal of Sustainable Energy, Taylor and Francis, 2018 – 20

“Further Integration and Advancement of Sustainability,” Sustainable Energy Technologies and Assessments, Elsevier, 2018-19

“Natural Resources and Energy Usage,” Sustainable Energy Technologies and Assessments, Elsevier, 2017-18

Proceedings

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2024). Brightening Tomorrow Together. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2023). Engineering to Adapt. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2022). Responsible Engineering and Living. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2022). *Mitigating Climate Change*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2021). *Sustaining Tomorrow*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2020). *Complementary Resources for Tomorrow*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2018). *The Energy Mix for Sustaining Our Future: Selected Papers from Proceedings of Energy and Sustainability*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A. (Ed.). (2017) *Proceedings of the International Conference of Numerical Analysis and Applied Mathematics*. American Institute of Physics (AIP).

Committees

University of South Florida

Fall 2025 – present	Graduate Council	Member
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University of South Florida, College of Engineering

Fall 2025 – present	Strategic Plan Development, Discovery Pillar	Champion
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University of South Florida, Department of Mechanical and Aerospace Engineering

Fall 2024 – present	Aerospace Committee	Chair
Fall 2025 – present	Department Chair Search Committee	Chair
Fall 2025 – present	Tenure/Tenure Track Search Committee	Chair
Fall 2024 – Spring 2025	Tenure/Tenure Track Search Committee	Chair
Fall 2024 – Spring 2025	Faculty of Instruction Search Committee	Member

Tennessee Tech University, Department of Mechanical Engineering

Fall 2021 – Fall 2024	Goals and Assessment Committee	Member
Fall 2021 – Spring 2022	Tenure/Tenure Track Search Committee	Member
Fall 2018 – Spring 2021	Graduate Committee	Member
Fall 2017 – Spring 2018	Lecturer Search Committee	Member
Spring 2018	Curriculum Committee	Member

Tennessee Tech University, College of Engineering

2020–2021	New Engineering Building Fluids Laboratory	Planning Committee Member
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Outreach

Tennessee Tech University

2023	Explorations in Engineering and Computing Camp	Departmental Lead
2023	Governor's School for Emerging Technologies	Wind Energy R&D Team Leader
2022	Explorations in Engineering and Computing Camp	Departmental Co-Lead
2022	Governor's School for Emerging Technologies	Wind Energy R&D Team Leader
2021	Explorations in Engineering and Computing Camp	Departmental Co-Lead
2020	Governor's School for Emerging Technologies	Speaker
2020	Explorations in Engineering and Computing Camp	Participant
2018	Governor's School for Emerging Technologies	Speaker
2017–2023	TN Tech Showcase Events	Wind Tunnel Lab Demonstrations

University of Windsor, Canada

2015	Natural Gas and Hydrogen Storage Symposium	Communication Chair
2014	Offshore Energy and Storage Symposium	Logistics Coordinator
2014	Canadian Science Writers Association Annual Conference	Logistics Coordinator

Reviewer

National Science Foundation

Thermal Transport Processes Program	Panelist/Ad Hoc Reviewer
Environmental Sustainability Program	Ad Hoc Reviewer
Fluid Dynamics Program	Panelist
Major Research Instrumentation (MRI)	Panelist

Journals

Journal of Testing and Evaluation
Wind Energy Science Atmosphere
Applied Energy
Sustainable Energy Technologies and Assessments
Energy Conversion and Management
Fluid Dynamics Research Energies
International Journal of Numerical Methods for Heat & Fluid Flow
AIMS Energy
International Journal of Engineering and Technology Innovation
Journal of Energy Resources Technology (Transactions of the ASME)
International Journal of Energy Research

Conferences

2024	8 th Cleaner Earth and Atmosphere	Windsor, ON, Canada	Program/Session Chair
2024	Brightening Tomorrow Together	Windsor, ON, Canada	Program/Session Chair
2024	AIAA Aviation Forum	Las Vegas, NV	Session Chair
2023	Engineering to Adapt	Windsor, ON, Canada	Program/Session Chair
2022	Responsible Engineering & Living	Windsor, ON, Canada	Program/Session Chair
2020	Mitigating Climate Change	Windsor, ON, Canada	Program Chair
2019	Energy & Resources for Tomorrow	Windsor, Canada	Program/Session Chair
2018	Energy and Sustainability	Windsor, Canada	Program/Session Chair
2017	International Conference of Numerical Analysis and Applied Mathematics	Thessaloniki, Greece	Symposium organizer
2015	Natural Gas and Hydrogen Storage	Windsor, Canada	Session Chair

Judge

2022 Tennessee Tech University's Research and Creative Inquiry Day
2022 Tennessee's FIRST LEGO League Tournament
2018 Tennessee Tech University's Research and Creative Inquiry Day