

## Defining Clarkson Research with Sustainability Content

Addressing sustainability through scholarly work is critical for advancing our understanding of the world and how we can move our society forward in a sustainable manner. An inventory of sustainability in research was completed in December 2018 per the requirements of AASHE STARS credit AC-9 (<https://stars.aashe.org/pages/about/technical-manual.html>). A review of faculty information available through Clarkson's web site and research databases was completed to identify faculty and their research topics that might have sustainability content. Communication with department chairs and their faculty confirmed the appropriateness of their inclusion on the inventory.

The definitions used in the STARS guidance document, the UN Sustainable Development Goals (SDGs), and the Earth Charter were used to identify sustainability in research.

“Sustainability research is research that leads toward solutions that simultaneously support social wellbeing, economic prosperity, and ecological health. It includes academic research that:

- Explicitly addresses sustainability and/or furthers our understanding of the interconnectedness of social, economic and environmental issues;
- Contributes directly toward solving one or more major sustainability challenge (e.g. contributes toward achieving principles outlined in the Earth Charter or SDGs); and/or
- Engages community members with the aim of combining knowledge and action to achieve positive social, economic and environmental outcomes (e.g. participatory and community-based research and engaged scholarship)” (STARS technical manual AC-09.04)

Major sustainability challenges were defined as contributing towards achieving the principles outlined in the Earth Charter or SDGs. The key features of the SDGs and Earth Charter's very broad definition of sustainability are included in Attachment A.

The detailed list of faculty members included in the sustainability research inventory is included in Attachment B. These faculty include a subset of research oriented departments and research oriented faculty. This excludes departments that are limited to professional programs taught by adjuncts – CRC (Engr.) or clinic programs (health sciences). The total faculty count includes all tenured and tenurable faculty except clinical faculty. Overall, it is clear that a large number of our faculty from a diverse array of disciplines address aspects of sustainability in their scholarly work.

- 82 faculty members are included in the inventory (46% (out of 178 T/TT (excluding clinical faculty) FY19))
- Faculty from all schools, the ISE and the Institute of STEM Education are conducting research related to sustainability or solving sustainability problems.
- All departments that have research oriented tenure/tenure-track faculty lines are included in the list. Clinical faculty in the health sciences area were not included in the assessment.

## **Attachment A: Earth Charter and UN SDGs**

(see more at <http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html>  
<https://www.un.org/sustainabledevelopment/development-agenda/> )

### **Earth Charter**

#### **I . RESPECT AND CARE FOR THE COMMUNITY OF LIFE**

1. Respect Earth and life in all its diversity.
2. Care for the community of life with understanding, compassion, and love.
3. Build democratic societies that are just, participatory, sustainable, and peaceful
4. Secure Earth's bounty and beauty for present and future generations.

#### **II . ECOLOGICAL INTEGRITY**

5. Protect and restore the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life
6. Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach
7. Adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being
8. Advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired.

#### **III . SOCIAL AND ECONOMIC JUSTICE**

9. Eradicate poverty as an ethical, social, and environmental imperative
10. Ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner
11. Affirm gender equality and equity as prerequisites to sustainable development and ensure universal access to education, health care, and economic opportunity
12. Uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of indigenous peoples and minorities

#### **IV . DEMOCRACY, NONVIOLENCE, AND PEACE**

13. Strengthen democratic institutions at all levels, and provide transparency and accountability in governance, inclusive participation in decision making, and access to justice.
14. Integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life.
15. Treat all living beings with respect and consideration
16. Promote a culture of tolerance, nonviolence, and peace

## SDG GOALS



## Attachment B: Sustainability Research Inventory

Name	School	Dept	Research area	Example scholarly work
<b>Sean Philpot</b>	CRC	Bioethics	Health care access and equity	Faith Fletcher, Lucy Annang Ingram, Jelani Kerr, Meredith Buchberg, Libby Bogdan-Lovis, and Sean Philpott-Jones (2016). "She Told Them, Oh That Bitch Got AIDS": Experiences of Multilevel HIV/AIDS-Related Stigma Among African American Women Living with HIV/AIDS in the South Behavioral and Psychosocial Research Vol. 30, No. 7 <a href="https://doi.org/10.1089/apc.2016.0026">https://doi.org/10.1089/apc.2016.0026</a>
<b>Seema Rivera</b>	STEM Ed	Educ	STEM teaching in secondary schools, including environmental issues	Oliveira, A.W., Rogers, P., Quigley, C.F., Samburskiy, D., Barss, K., Rivera, S. (2013). Environmental Agency in Read-Alouds. Cultural Studies of Science Education. DOI 10.1007/s10972-012-9289-9 Principal Investigator, "Watershed Education through STEM Enrichment", The NYS DEC Pollution Prevention Institute (P2I) Community Grants Program, \$20,000 (Awarded 2016)
<b>Andrew David</b>	A&S	Bio	understanding the dispersal and range expansion of aquatic invasive species; Parasite/pathogen reaction to climate change	David A.A., Loveday B.R. (2017). The role of cryptic dispersal in shaping connectivity patterns of marine populations in a changing world. Journal of the Marine Biological Association of the United Kingdom. DOI: 10.1017/S0025315417000236
<b>Susan Bailey</b>	A&S	Bio	mathematical ecology and evolution; analysis of ecological systems under uncertainty and change	she received the prestigious Jasper Loftus-Hills Young Investigators Award from the Society of American Naturalists, the major scientific organization for ecology-evolution-organismal biology
<b>Tom A. Langen</b>	A&S	Bio	improve conservation and management of nature in human-dominated landscapes	Stryzowska, K.M., M.R. Twiss, and T.A. Langen. 2016. Biodiversity and water quality indicators of Beneficial Use Impairments in wetlands of the Massena (New York) Area of Concern. Journal of Great Lakes Research 42:708-716.
<b>Michael R. Twiss</b>	A&S	Bio	Biogeochemical processes in Great Lakes and Rivers	Twiss, M.R. and Stryzowska, K.M. 2016. State of emerging technologies for assessing aquatic condition in the Great Lakes-St. Lawrence River system. Journal of Great Lakes Research, 42:1470-1477. Twiss, M.R.2016. Standardized methods are required to assess and manage microplastic contamination of the Great Lakes system. Journal of Great Lakes Research, 42: 921-925, DOI: 10.1016/j.jglr.2016.07.032.
<b>Kenneth Wallace</b>	A&S	Bio	Nanoparticle affects due to environmental exposure.	Dumitrescu, Eduard; Karunaratne, Dinusha P.; Babu, S. V.; et al., (2018) Interaction, transformation and toxicity assessment of particles and additives used in the semiconducting industry, CHEMOSPHERE 192: 178-185
<b>Silvana Andreescu</b>	A&S	CBS	analytical and bioanalytical chemistry, environmental chemistry, sustainable nanotechnology	Mustafa, Fatima; Andreescu, Silvana (2018). Chemical and Biological Sensors for Food-Quality Monitoring and Smart Packaging FOODS, 7(10): 168
<b>Evgeny Katz</b>	A&S	CBS	Biofuel Cells, Bioelectronics & Bio-nanotechnology	A. Koushanpour, M. Gamella, N. Guz, E. Katz, A biofuel cell based on biocatalytic reactions of glucose on both anode and cathode electrodes, Electroanalysis, 2017. A. Koushanpour, N. Guz, M. Gamella, E. Katz, Biofuel cell based on carbon fiber electrodes functionalized with graphene nanosheets, ECS Journal of Solid State Science and Technology 2016, 5, M3037-M3040.
<b>Xiaocun Lu</b>	A&S	CBS	develop emerging smart materials at the mesoscale - Environmentally-responsive materials	C Yi, K Yue, WB Zhang, X Lu, J Hou, Y Li, L Huang, GR Newkome, Conductive Water/Alcohol-Soluble Neutral Fullerene Derivative as an Interfacial Layer for Inverted Polymer Solar Cells with High Efficiency ...ACS applied materials & interfaces 6 (16), 14189-14195

Name	School	Dept	Research area	Example scholarly work
<b>Devon Shipp</b>	A&S	CBS	degradable polymers for bio-related applications	Poetz, KL; Shipp, DA, 2016. Polyanhydrides: Synthesis, Properties, and Applications, AUSTRALIAN JOURNAL OF CHEMISTRY 69:11 Pages: 1223-1239. DOI: 10.1071/CH16144
<b>Mario Wriedt</b>	A&S	CBS	Nanomaterials for hydrogen fuel storage systems / CO2 sequestration	W.M. Verdegaal, K. Wang, J.P. Sculley, M. Wriedt & H.-C. Zhou, "Evaluation of Metal-Organic Frameworks and Porous Polymer Networks for CO2-Capture Applications" ChemSusChem, 2016, 9, 636-643.
<b>Stephen Farina</b>	A&S	Comm	Communications and Community Development	Film – Resilience – related to ice storms and damage in Northern NY; screened as an official selection for the 2018 Cinema Verde International Environmental Film Festival in Gainesville, Florida <a href="http://www.cinemaverde.org/2018films/">http://www.cinemaverde.org/2018films/</a>
<b>Alex Lee</b>	A&S	Comm	digital art	Designing some of the digital displays for NYC’s proposed Estuarium (interface between Hudson River and Atlantic Ocean) for environmental education
<b>Jason Schmitt</b>	A&S	Comm	Communications, economic and social impact of academic publishing (open access) and access to education	Jason Schmitt (2016). <a href="#">The Philippines And Other Developing Countries Ramp Up Online Education Culture</a> , Forbes,
<b>Eric York</b>	A&S	Comm	exploring the connections between rhetoric and user-experience design and the effects of educational technologies on institutions of higher learning	Web design for Smart Housing utility use feedback platform to increase water and energy conservation
<b>Jeanna N. Matthews</b>	A&S	CS	Application of CS to a variety of sustainability projects: Development of green data center, Air quality	S. Gurajala, J. Matthews , Twitter analysis to understand societal response to air quality Proceedings of the 9th International Conference on Social Media & Society Copenhagen, Denmark, July 18-20 2018.
<b>Natasha Banerjee</b>	A&S	CS	Software design, application to human-machine interfaces for environmental applications	Yan Gao, Daqing Hou, Natasha Kholgade Banerjee, and Sean Banerjee (2016). Water fixture identification in smart housing: a domain knowledge based case study, Intl. Conference on Machine Learning and Applications.
<b>Stephen D. Bird</b>	A&S	HSS	energy and environmental politics and policy, social justice and activism, social networks, political behavior, and pedagogy	Bird, Stephen, and Chelsea Hotaling. forthcoming 2017. "Multi-Stakeholder Microgrids for Resilience and Sustainability." Environmental Hazards, Special issue on Sustainability and Environmental Hazards, Peter Walker, Guest Editor.
<b>Laura Ettinger</b>	A&S	HSS	Gender equity: history of women, gender, and the medical, scientific, and technological professions in the United States, state of American health care, women’s health, and women in technology and science today.	A Very Cold Reception: Rouge Chapter of Alpha Kappa Psi Defies Convention to Admit Women ( <a href="http://www.ultimatehistoryproject.com/untitled.html">http://www.ultimatehistoryproject.com/untitled.html</a> ) State of Women in Engineering: Then and Now: Pioneers’ Perspectives <a href="https://www.youtube.com/watch?time_continue=629&amp;v=OclGfDxaJ4o">https://www.youtube.com/watch?time_continue=629&amp;v=OclGfDxaJ4o</a> . Dr. Ettinger’s presentation is from 41:22 – 1:02:33 (Nov 2018)
<b>Camille Frazier</b>	A&S	HSS	interrelationships among food, the environment, and urban development- how shifting food systems offer a lens to understand sociopolitical and economic anxieties related to urbanization and environmental change	2018. "Grow what you eat, eat what you grow": urban agriculture as middle class intervention in India." Journal of Political Ecology vol. 25, pp. 221-238.
<b>William Vitek</b>	A&S	HSS	Philosophical basis for sustainability, intersection of social practices and the environmental, cultural, and historical contexts in which they occur	The Virtues of Ignorance: Complexity, Sustainability, and the Limits of Knowledge, by William Vitek (Editor), Wes Jackson (Editor) (2008); The Land Institute: Ecosphere Studies Update - Krug, Vitek and Jackson, <a href="https://www.youtube.com/watch?v=yKQzJpF8QyY">https://www.youtube.com/watch?v=yKQzJpF8QyY</a> (2017)
<b>Christina V. Xydias</b>	A&S	HSS	Women’s rights/ equity	Discrepancies in Women’s Presence Between European National Legislatures and the European Parliament: A Contextual Explanation,” Political Research Quarterly , 69(4): 800-812 (December 2016)

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<b>Erik Bollt</b>	A&S	Math	mathematical modeling applied to many types of systems, including ecosystem behavior, remote sensing for observing oceans	Rumbaugh, Luke K.; Dunn, Kaitlin J.; Bollt, Erik M.; et al. (2016) An underwater chaotic lidar sensor based on synchronized blue laser diodes. Conference: Conference on Ocean Sensing and Monitoring VIII Location: Baltimore, MD Date: APR 19-20, 2016
<b>Kathleen R. Kavanaugh</b>	A&S	Math	Numerical Methods, Mathematical Modeling of water resource systems	K.R. Fowler, E.W. Jenkins, M. Parno, J.C. Chrispell, A. Rivas, and R.T. Hanson, Development and Use of Mathematical Models and Software Frameworks for Integrated Analysis of Agricultural Systems and Associated Water Use Impacts, Agriculture and Food, May 2016.
<b>Jonathan Martin</b>	A&S	Math	Modeling of invasive species	New York State Department of Environmental Conservation - Invasive Species Rapid Response and Control: Norwood Lake Invasive Watermilfoil Eradication Project, White, D.(PI), J. Martin (Co-PI) and Twiss, M.R. (Co-PI), 2017-2020; \$58,554
<b>Sumona Mondal</b>	A&S	Math	Statistical methods applied to environmental problems	Bramwell, Lisa; Qian, Jing; Howard-Reed, Cynthia; et al. (2016). An evaluation of the impact of flooring types on exposures to fine and coarse particles within the residential micro-environment using CONTAM. JOURNAL OF EXPOSURE SCIENCE AND ENVIRONMENTAL EPIDEMIOLOGY 26(1): 86-94
<b>Joseph D. Skufca</b>	A&S	Math	applied mathematical modeling: modeling of phytoplankton population dynamics, smart grid modeling, development of green data center	Emily E. Ball · Derek E. Smith · Eric J. Anderson · Joseph D. Skufca · Michael R. Twiss, Water velocity modeling can delineate nearshore and main channel plankton environments in a large river, Mar 2018, Hydrobiologia
<b>Diana White</b>	A&S	Math	research problems that are at the interface between Mathematics and Biology	New York State Department of Environmental Conservation - Invasive Species Rapid Response and Control: Norwood Lake Invasive Watermilfoil Eradication Project, White, D.(PI), J. Martin (Co-PI) and Twiss, M.R. (Co-PI), 2017-2020; \$58,554
<b>Guangming Yao</b>	A&S	Math	Numerical simulation of air and water pollution, including groundwater remediation and air pollutants from wood stove	G. Yao, Karen Bliss, Michelle Crimi, Katie Fowler, Jesse Clark-Stone, and Wen Li, Radial Basis Function Simulation of Slow-Release Permanganate for Groundwater Remediation Via Oxidation, Journal of Computational and Applied Mathematics, 307, 235--247, 2016.
<b>Dipankar Roy</b>	A&S	Phy	Materials for energy storage and energy conversion devices: electrodes for alcohol fuel cells; efficient materials for PV cells	M.C. Turk, C. A. Johnson and D. Roy, "Electroanalytical Evaluation of Temperature Dependent Electrolyte Functions for Lithium Ion Batteries: Investigation of Selected Mixed Carbonate Solvents using a Lithium Titanate Electrode", Journal of Energy Storage 20 (2018) 395-408.
<b>Lisa Legault</b>	A&S	Psy	How the source of motivation underlying beliefs, attitudes, and behavior influences the successful self-regulation of those beliefs, attitudes, and behaviors. Applied to prejudice, energy conservation	Bird, S., & Legault, L. (2018). Feedback and behavioral intervention in residential energy and resource use: A review. Current Sustainable/Renewable Energy Reports.
<b>Erik Backus</b>	CSoE	CEE	Sustainable Construction, Energy/Alternative Energy Metrics/Management, Alternate Transportation Impacts/Planning	Backus, Erik. C. and Weidner, Ted, (2017) "Getting the Most out of APPA's FPI Survey and Report Tool—And a Preview of What's to Come", Facilities Manager, APPA (Sep/Oct 2017), pp 49-51
<b>Abul Basar Baki</b>	CSoE	CEE	environmental hydraulics for sustainability	Hulsman, M. F., Cahill, C. L., Erwin, A. C., Lunn, B. D., Tonn, W. M., Howland, K. L., & Baki, A. B. M. (2016). "Influence of potential fish competitors on Lake Trout trophic ecology in small lakes of the Barrenlands, N.W.T, Canada." Journal of Great Lakes Research, 42, 290–298.
<b>Behzad Behnia</b>	CSoE	CEE	Smart & sustainable transportation infrastructure	Behnia, B., Buttlar, W. G., & Reis, H. (2016). Nondestructive low-temperature cracking characterization of asphalt materials. Journal of Materials in Civil Engineering, 29(5), 04016294.
<b>John P. Dempsey</b>	CSoE	CEE	Effects of scale on the strength and fracture properties of structural materials, including Antarctic ice sheets	G Morley, J Dempsey A Workman's Guide to In Situ Sea Ice Fracture Testing - Proceedings of the International Conference on Port and Ocean Engineering Under Arctic Conditions, 2015
<b>Andrea R. Ferro</b>	CSoE	CEE	indoor air quality, fate and transport of pollutants in the built environment, exposure versus health effect relationships for nanoparticles and allergens/asthmagens	Lai, Alvin C.K., Yilin Tian, Judy Y.L. Tsoi, and Andrea R. Ferro. 2017. "Experimental Study of the Effect of Shoes on Particle Resuspension from Indoor Flooring Materials." Building and Environment, DOI: 10.1016/j.buildenv.2017.02.024.
Name	School	Dept	Research area	Example scholarly work

<b>Stefan J. Grimberg</b>	CSoE	CEE	Biofuels, waste for energy recovery (digestion)	Rick Welsh, Michaele E. Webb, Stefan Grimberg and Shane Rogers Measuring the results of a workshop on installing anaerobic digesters on smaller livestock farms. Renewable Agriculture and Food Systems · May 2018. DOI: 10.1017/S1742170518000212
<b>Thomas M. Holsen</b>	CSoE	CEE	determining the sources, movement, transformations and fate of environmental pollutants including emerging contaminants of concern in a wide array of environmental systems including the Adirondacks and the Great Lakes.	H Zhou, PK Hopke, C Zhou, TM Holsen Ambient mercury source identification at a New York State urban site: Rochester, NY. Science of the Total Environment 650, 1327-1337
<b>Kerop D. Janoyan</b>	CSoE	CEE	Sustainable buildings and infrastructure, renewable energy, Sensors and controls, development of green data center	Nikdel, L., K. Janoyan, S. D. Bird, S.E. Powers, Multiple Perspectives of the Value of Occupancy-based HVAC Control Systems. Buildings and Energy, November 2017. DOI: 10.1016/j.buildenv.2017.11.039
<b>Ian Knack</b>	CSoE	CEE	River ice processes including: sediment transport in rivers subject to freezing, river ice breakup dynamics, interaction of suspended sediment and frazil ice, effect of surface ice on channel stability, and fish habitat and ecology	Ian M Knack, Hung Tao Shen, (2018) A numerical model for sediment transport and bed change with river ice Journal of Hydraulic Research, Pages 1-13
<b>Sulapha Peethamparan</b>	CSoE	CEE	development, characterization, performance evaluation, and modeling of cement-based materials, primarily focusing on developing sustainable infrastructural materials	Thomas, R.J., Ye, H., Radlińska, A., and Peethamparan, S., "Alkali-Activated Slag cement Concrete; A closer look at a sustainable alternative to portland cement", Concrete International, January, (2016) 33, 38
<b>Shane Rogers</b>	CSoE	CEE	fate, transport, and vectoring of microbial and chemical stressors in the environment; risks from exposure to pathogens in the env. and produce grown for human consumption	Shane W. Rogers, Carrie E. Shaffer, Tom A. Langen, Michael Jahne and Rick Welsh (2018) Antibiotic-Resistant Genes and Pathogens Shed by Wild Deer Correlate with Land Application of Residuals EcoHealth <a href="https://doi.org/10.1007/s10393-018-1316-7">https://doi.org/10.1007/s10393-018-1316-7</a>
<b>Hayley H. Shen</b>	CSoE	CEE	Ocean Wave and Sea Ice Interactions, Formation of Pancake Ice	Thomson, J., S. Ackley, H. H. Shen, and W. E. Rogers (2017), The balance of ice, waves, and winds in the Arctic autumn, Eos, 98, doi:10.1029/2017EO066029. Published on 23 January 2017.
<b>Hung Tao Shen</b>	CSoE	CEE	river ice modeling; ice processes in Great Lakes Connecting Channels	Ian M Knack, Hung Tao Shen, (2018) A numerical model for sediment transport and bed change with river ice Journal of Hydraulic Research, Pages 1-13.
<b>Tyler J. Smith</b>	CSoE	CEE	Integrative watershed studies (hydrology, water quality, etc.) driven by quantitative analysis	Tang, Y., L. Marshall, A. Sharma, and T. Smith (2016). Tools for investigating the prior distribution in Bayesian hydrology, Journal of Hydrology, doi: 10.1016/j.jhydrol.2016.04.032.
<b>Robert Thomas</b>	CSoE	CEE	Alternative cement for sustainable concrete	Thomas, R.J., Ye, H., Radlińska, A., and Peethamparan, S., "Alkali-Activated Slag cement Concrete; A closer look at a sustainable alternative to portland cement", Concrete International, January, (2016) 33, 38
<b>Weiming Wu</b>	CSoE	CEE	sediment transport; water quality and aquatic ecosystem/ecotoxicology modeling	Q. Zhong, W. Wu, S. Chen, and M. Wang (2016). "Comparison of simplified physically-based dam breach models." Natural Hazards, (2016) 84:1385–1418. DOI: 10.1007/s11069-016-2492-9.
<b>Ruth E. Baltus</b>	CSoE	ChBE	Ionic Liquids (for carbon sequestration), Membranes for environmental separations	Armin Delavari and Ruth Baltus (2017). The Effect of the Pore Entrance on Particle Motion in Slit Pores: Implications for Ultrathin Membranes Membranes 2017, 7, 42; doi:10.3390/membranes7030042
<b>Taeyoung Kim</b>	CSoE	ChBE / ISE	application of electrochemical principles and technologies to address environmental and sustainability challenges in water and energy systems. - water desalination, electrical power production from salinity gradients, waste heat, and CO2	T Kim, M Rahimi, BE Logan, CA Gorski (2016). Harvesting Energy from Salinity Differences Using Battery Electrodes in a Concentration Flow Cell, Environmental Science and Technology 50 (17), 9791-9797

Name	School	Dept	Research area	Example scholarly work
<b>Sitaraman Krishnan</b>	CSoE	ChBE	molecular-scale engineering of surfaces and thin films - applied to organic solar cells, high temperature proton exchange membrane fuel cells, and lithium ion batteries	Yanni Wang, Michael C. Turk, Malavarayan Sankarasubramanian, Anirudh Srivatsa, Dipankar Roy, Sitaraman Krishnan (2017) Thermophysical and Transport Properties of Blends of an Ether-derivatized Imidazolium Ionic Liquid and a Li+-based Solvate Ionic Liquid, Journal of Materials Science
<b>John B. McLaughlin</b>	CSoE	ChBE	polymers, fluid mechanics, and reaction engineering, example - Modeling of air filters for low pressure environments.	Modeling of air filters for low pressure environments. Project is supported by Pall Corporation
<b>Selma Mededovic Thagard</b>	CSoE	ChBE	plasma oxidation for energy efficient water treatment, biofuel production	Gunnar Stratton, Fei Dai Christopher Bellona, Selma Mededovic Thagard et al. (2017) Plasma-based water treatment: Efficient transformation of perfluoroalkyl substances (PFASs) in prepared solutions and contaminated groundwater, Environmental Science and Technology 51(3) DOI: 10.1021/acs.est.6b04215
<b>David Mitlin</b>	CSoE	ChBE	renewables and conventional energy topics, focusing on the creation of new materials from agricultural waste for sodium ion batteries and lithium ion batteries, and electrochemical capacitors for aggressive oil refining environments	Exceptional energy and new insight with sodium - selenium battery based on carbon nanosheet cathode and pseudographite anode J Ding, H Zhou, H Zhang, TJ Stephenson, Z Li, D Karpuzov and D Mitlin Energy & Environmental Science, 10 (2017) 153-165 doi:10.1039/C6EE02274J
<b>Shunsuke Nakao</b>	CSoE	ChBE	chemistry and physics of aerosol and clouds in the atmosphere with the goal of mitigating air pollution and climate change	Li, L., Tang, P., Nakao, S., Cocker III, D. R. (2016) Impact of molecular structure on secondary organic aerosol formation from aromatic hydrocarbons photooxidation under low NOx conditions, Atmospheric Chemistry and Physics, 16, 10793-10808. [DOI]
<b>Eunsu Paek</b>	CSoE	ChBE	multiscale modeling of nanomaterials for energy and environmental applications	J Ding, W Hu, E Paek, D Mitlin (2018) Review of Hybrid Ion Capacitors: From Aqueous to Lithium to Sodium, Chemical reviews 118 (14), 6457-6498
<b>Elizabeth Podlaha-Murphy</b>	CSoE	ChBE	Electrochemistry – e.g. H2 fuel production	Y Zhang, HK Bilan, E Podlaha (2018). Enhancing the hydrogen evolution reaction with Ni-W-TiO2 composites, Electrochemistry Communications 96, 108-112
<b>Zijie Yan</b>	CSoE	ChBE	integrated approach of nanomaterial synthesis, property characterization, and electrodynamic simulation for applications in energy & environment	Sheng Zhu, Yong Liu, Guitai Wu, Linfeng Fei, Shaohua Zhang, Yongming Hu, Zijie Yan, Yu Wang, Haoshuang Gu, Wanping Chen (2019) Mechanism study on extraordinary room-temperature CO sensing capabilities of Pd-SnO2 composite nanoceramics Sensors and Actuators B: Chemical. <a href="https://doi.org/10.1016/j.snb.2019.01.027">https://doi.org/10.1016/j.snb.2019.01.027</a>
<b>Daqing Hou</b>	CSoE	ECE	software development environments and tools, including applications for greenhouse and digester and smart housing projects.	Yan Gao, Daqing Hou, Sean Banerjee: Fixture identification from aggregated hot water consumption data. ISC2 2016: 1-6
<b>Jie Li</b>	CSoE	ECE	Alternate Energy Systems, Power System Reliability and Planning, Deregulated Power Systems & Smart Grids	Recipient of NSF CAREER grant: CAREER: A Hierarchical Restructuring Operation Framework for Sustainable and Resilient Electricity Distribution Systems, NSF, 2017~2022 Ortmeyer, T., L. Wu, Jie Li, Planning and design goals for resilient microgrids, In: 2016 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT) <a href="http://www.clarkson.edu/news/2015/news-release_2015-09-14-1.html">http://www.clarkson.edu/news/2015/news-release_2015-09-14-1.html</a>
<b>Thomas H. Ortmeyer</b>	CSoE	ECE	Power engineering, microgrids, Alternate Energy, Electric Transportation, smart grid	Ortmeyer, T., L. Wu, Jie Li, Planning and design goals for resilient microgrids, In: 2016 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT) <a href="https://www.clarkson.edu/news/tuyen-vu-appointed-assistant-professor-electrical-and-computer-engineering-clarkson-university">https://www.clarkson.edu/news/tuyen-vu-appointed-assistant-professor-electrical-and-computer-engineering-clarkson-university</a>
<b>Tuyen Vu</b>	CSoE	ECE	smart grid, power system dynamics, stability and control; energy management and optimization; and integration of energy storage systems, renewable energy systems, and electric vehicles into the distribution systems	Tuan Ngo, Tuyen Vu, (2018) Study of Low Frequency AC Transmission for Wind Turbine Applications In: Proceedings, 2018 IEEE Power & Energy Society General Meeting
<b>Lei Wu</b>	CSoE	ECE	stochastic modeling and optimization of large-scale power systems, high penetration renewable energy, demand response, and power system reliability and economics	Ortmeyer, T., L. Wu, Jie Li, Planning and design goals for resilient microgrids, In: 2016 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT).



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<b>Goodarz Ahmadi</b>	CSoE	MAE	Fluid mechanics applications for Air Pollution, PM Transport and deposition, including into human lungs and health impacts, geological CO2 sequestration	Keshavarz, S.A., Salmazadeh, M., and Ahmadi, G., Computational Modeling of Time Resolved Exposure Level Analysis of a Heated Breathing Manikin with Rotation in a Room, <i>Journal of Aerosol Science</i> , Vol. 103, pp. 117–131 (2017).
<b>Douglas G. Bohl</b>	CSoE	MAE	development and application of new diagnostic techniques for measurement of fluid flows. Examples: Use of biomimicry for design – humpback whale flippers	S. Mededovic Thagard, G. Stratton, F. Dai, C. Bellona, T. Holsen, D.G. Bohl, E. Paek, E. Dickenson, "Plasma-based water treatment: development of a general mechanistic model to estimate the treatability of different types of contaminants", <i>JPhysD-110632.R1</i> (2016)
<b>Suresh Dhaniyala</b>	CSoE	MAE	Measuring atmospheric constituents that contribute to human health impacts and climate change; climate education	Peterson, P. K., Pöhler, D., Sihler, H., Zielcke, J., General, S., Frieß, U., Platt, U., Simpson, W. R., Nghiem, S. V., Shepson, P.B., Stirm, B. H., Dhaniyala, S., Wagner, T., Caulton, D. R., Fuentes, J. D., and Pratt, K. A.: Observations of bromine monoxide transport in the Arctic sustained on aerosol particles, <i>Atmos. Chem. Phys.</i> , 17, 7567-7579, <a href="https://doi.org/10.5194/acp-17-7567-2017">https://doi.org/10.5194/acp-17-7567-2017</a> , 2017.
<b>Brian Helenbrook</b>	CSoE	MAE	Numerical Simulation for Fluid-Flows in natural and engineered systems - novel wind turbine	Venters R, Helenbrook BT, Visser KD. Ducted Wind Turbine Optimization. <i>ASME. J. Sol. Energy Eng.</i> 2017;140(1):011005-011005-8. doi:10.1115/1.4037741.
<b>Kenneth D. Visser</b>	CSoE	MAE	Aerodynamics, Sustainable Energy, Wind turbine technology development and implementation	Bagheri-Sadeghi, N., Helenbrook, B. T., and Visser, K. D.: Ducted wind turbine optimization and sensitivity to rotor position, <i>Wind Energ. Sci.</i> , 3, 221-229, <a href="https://doi.org/10.5194/wes-3-221-2018">https://doi.org/10.5194/wes-3-221-2018</a> , 2018.
<b>Jan DeWaters</b>	CSoE		Energy and climate literacy and education	Grant funded - "Food-to-Energy: Cross-Fertilizing a K-12/University Partnership to Develop a Resource Recovery Program." Constellation E <sup>2</sup> Energy to Educate grant program (2019)
<b>Bebonchu Atems</b>	Reh		Econometric analysis: income inequality, energy shocks, and fiscal policy	Bird, Stephen, Ross Miller, and Bebonchu Atems. "Fracking in the Empire State: Environmental Coproduction, Stakeholder Perceptions, and Policy Type (in preparation)
<b>Michelle Crimi</b>	Reh/ISE	E&M	Remediation of Contaminated Soil and Ground Water Systems	Craig E Divine, Jesse Wright, Jack Wang, Jeff McDonough, Michael Kladias, Michelle Crimi, Blossom N Nzeribe, JF Devlin, Michael Lubrecht, Daniel Ombalski, Billy Hodge, Hoa Voscott, Kathleen Gerber (2018) The horizontal reactive media treatment well (HRX Well®) for passive in situ remediation: Design, implementation, and sustainability considerations, <i>Remediation Journal</i> 28:4, 5-16
<b>Luciana Echazu</b>	Reh		Development Economics; International Trade; and Behavioral Microeconomics	Luciana Echazu, Martin Heintzelman (2018) Environmental regulation and love for variety: <i>Review of International Economics</i> , DOI: 10.1111/roie.12382
<b>Martin D. Heintzelman</b>	Reh /ISE		Environmental and Natural Resource Economics, Balancing society and environment in the Adirondacks	Luciana Echazu, Martin Heintzelman (2018) Environmental regulation and love for variety, <i>Review of International Economics</i> , DOI: 10.1111/roie.12382 C Tang, MD Heintzelman, TM Holsen, (2018) Mercury pollution, information, and property values, <i>Journal of Environmental Economics and Management</i> 92, 418-432
<b>Tyson Mackey</b>	Reh		Corporate Social Responsibility, increasing access to employer provided health care	Ted London, Lisa Mali Jones, Tyson Brighton Mackey, Heather Esper, Andy Grogan-Kaylor (2018) Health Investments & Human Capital: Enhancing Entrepreneur Well-Being in Low-Resource Environments, <i>Academy of Management Proceedings</i>
<b>Golshan Madraki</b>	Reh		Operations Research, smart grid	Sarmad Mehrdad, Seyedamirabbas Mousavian, Golshan Madraki, Yury Dvorkin (2018) Cyber-Physical Resilience of Electrical Power Systems Against Malicious Attacks: a Review, <i>Current Sustainable/Renewable Energy Reports</i> , 5(1): 14-22
<b>Farzad Mahmoodi</b>	Reh		systems modeling and simulation, and quality management, environmental supply chain management	Alex J Ruiz-Torres, Farzad Mahmoodi, Shunichi Ohmori (2019) Joint determination of supplier capacity and returner incentives in a closed-loop supply chain, <i>Journal of Cleaner Production</i> , 215:1351
<b>Cecilia Martinez</b>	Reh	E&M	Lean for sustainability and healthcare, Project Management for Complex Products and Systems	<a href="http://www.clarkson.edu/news/2015/news-release_2015-09-14-1.html">http://www.clarkson.edu/news/2015/news-release_2015-09-14-1.html</a> Martinez Leon, Cecilia, Calvo-Amodio Javier, (2016) "Towards lean for sustainability: Understanding the interrelationships between lean and sustainability from a systems thinking perspective ", <i>Journal of Cleaner Production</i> DOI: 10.1016/j.jclepro.2016.11.132

<b>Name</b>	<b>School</b>	<b>Dept</b>	<b>Research area</b>	<b>Example scholarly work</b>
<b>Amir Mousavian</b>	Reh		power systems optimization and cyber-security for smart grids	S Mousavian, M Erol-Kantarci, HT Mouftah, (2018) Cyber-Security and Resiliency of Transportation and Power Systems in Smart Cities, - Transportation and Power Grid in Smart Cities Communication Networks and Services, pp.507-527
<b>Santosh K. Mahapatra</b>	Reh		Green supply chain management, Advanced Manufacturing Practices and Environment Management; Re-manufacturing and Reverse Logistics	Cole, D., Mahapatra, S., and Webster, S. (2017) "A Comparison of Buyback and Trade-in Policies to Acquire Used Products for Remanufacturing." Journal of Business Logistics (forthcoming).
<b>Zhaleh Semnani-Azad</b>	Reh		Culture, gender and diversity in negotiations and work teams to identify and explain psychological and behavioral processes that stimulate conflict and hinder cooperation	NR Toosi, S Mor, Z Semnani-Azad, KW Phillips, ET Amanatullah (2018. Who Can Lean In? The Intersecting Role of Race and Gender in Negotiations. Psychology of Women Quarterly, 0361684318800492
<b>Alan Rossner</b>	ISE		Indoor Air Quality, Industrial Hygiene, Exposure Assessment	Rossner, A., Jordan, C., Wake, C., Monitoring of CO in Residences with Bulk Wood Pellet Storage in the Northeast, Journal of Air & Waste Management Association, 67 (10), 1066-1079 (2017)
<b>Susan E. Powers</b>	ISE		Environmental impacts of energy systems, Energy and climate literacy and education	Legault, L., S. Bird, S.E. Powers, A. Sherman, A. Schay, D. Hou, K. Janoyan, Impact of a Motivational Intervention and Interactive Feedback on Electricity and Water Consumption: A Smart Housing Field Experiment. Environment & Behavior, 1-27, 2018, DOI: 10.1177/0013916518811433