

Garrett M. Cole

Garrett.M.Cole@colostate.edu | Fort Collins, CO | www.linkedin.com/in/GMCole

PROFILE

Engineering advancements towards sustainability can help mitigate the magnitude of environmental and societal costs associated with a continued growth in worldwide food, water, and energy demand. I work to quantify the compromises between cost, water quality, air quality, and greenhouse gas emissions within the food, water, and energy nexus to inform experimental research and guide project direction through system modeling, optimization, techno-economic assessment (TEA), and life cycle analysis (LCA).

SKILLS

- Linear and Metaheuristic Optimization
- Technical Writing
- Life Cycle Assessment
- Techno-economic Analysis
- Sensitivity Analysis

Software Packages & Languages:

- Computer-aided design (CAD)
- Engineering Equation Solver (EES)
- VBA - Excel
- MATLAB
- Python
- Aspen Plus
- Aspen Capital Cost Estimator
- CapdetWorks

HONORS

- Collegiate Triathlon National Championship (2016, 2017, 2019, 2021)
- Pi Tau Sigma Honor Society (2016–2019)
- Presidents List (2015–2019)
- Presidential Scholarship (2015–2019)
- IRONMAN 70.3 World Championship (2017)
- Eagle Scout (2014)

PROFESSIONAL DEVELOPMENT

- National Science Foundation's Innovation Corps (I-Corps™) (2022)

Refereed Conference Publications:

- International Conference on Algal Biomass, Biofuels and Bioproducts (2023)
- Algae Biomass Summit (2022, 2023)
- International Symposium on Combustion (2022)
- The North American Membrane Society (NAMS) (2021)
- International Symposium on Sustainable Systems and Technology (ISSST) (2021)

Elective Graduate Coursework:

- Solar and Alternative Energies
- Engineering Optimization
- Turbomachinery

EDUCATION

Colorado State University, Fort Collins, CO 8/2019–6/2021

M.S. in Mechanical Engineering | GPA: 4.0

Thesis: Optimization of mobile oil and gas produced water treatment unit deployment logistics to achieve economic feasibility

Texas Tech University, Lubbock, TX 8/2015–5/2019

B.S. in Mechanical Engineering, Minor in Mathematics | GPA: 4.0

WORK EXPERIENCE

Colorado State University, Fort Collins, CO 8/2019–Present

Research Associate III (0.75 time) | 6/2021–Present

- Providing consulting, mentorship, and TEA support to startup companies participating in REACH, an energy hardtech accelerator
 - Identifying potential pathways to lower greenhouse gas and soot emission from diesel engines through LCA and process modeling of an oxygenated fuel biorefinery
 - Defining critical design parameters through TEA and LCA to aid the development of an anaerobic membrane digester for energy self-sufficient and cost competitive wastewater treatment (continuation of research assistantship project)
 - Progressing resource recovery options by zero liquid discharge through TEA of wastewater desalination and crystallization
 - Mentoring graduate research assistants and guiding their research direction
 - Securing funding by assisting project proposal development and technical writing
- Graduate Research Assistant | 8/2019–6/2021**
- Optimized logistics to improve feasibility of decentralized oil and gas wastewater recovery through various treatment methods using multi-objective optimization

Sustainability Science LLC, Steamboat Springs, CO 6/2021–Present

Senior Researcher (0.25 time)

- Identifying potential pathways to cost competitive biodiesel production at a first-of-a-kind algal biorefinery through the strategic use of high value co-products generated during algae cultivation
- Applying a Regen Registry carbon accounting methodology to compare a wastewater treatment upgrade with a nature based solution enabling nutrient trading and carbon trading
- Defining critical design parameters through TEA and LCA to support the development of a novel direct air capture technology

Philmont Scout Ranch 5/2019–8/2019

Backcountry Counselor and ASI Certified ATV Instructor

COMMUNITY INVOLVMENT

Colorado State Triathlon Club 8/2019–Present

- Alumni Advisor | 5/2022 - Present

Pi Tau Sigma Honor Society 1/2017–5/2019

- Fundraising Chair | 1/2019 - 5/2019

Texas Tech Triathlon Club 8/2015–5/2019

- Club President | 8/2017 - 5/2018