

2017 Summer Research Symposium

Thursday, July 27, from 1:30 – 3:00 pm, Thomas Cooper Library, University of South Carolina

Sponsored by the Office of the Vice President for Research

Research Experiences for Undergraduates:

Cradle to Grave: CO₂ Opportunities and Challenges

1-NO_x emissions from syngas combustion in gas turbines

Daniel Alvarado, University of Puerto Rico at Mayagüez, Chemical Engineering-Senior

Mentor: Dr. Bihter Padak, USC Columbia, Chemical Engineering

2-Development and Testing of High-throughput Gas Chromatography

Garrett Buchmann, Clemson University, Chemical Engineering-Sophomore

Mentor: Dr. Erdem Sasmaz, USC Columbia, Chemical Engineering

3-Utilization of Bimetallic Catalysts for Hydrodeoxygenation (HDO) of Acetic Acid

Karan Patel, University of Maryland, Chemical Engineering-Senior

Mentors: Dr. Christopher Williams, USC Columbia, Chemical Engineering

Mr. José Contreras-Mora, USC Columbia, Chemical Engineering

4-Nominal single-layered Graphene Oxide membranes on flat-sheet polymer supports for water nanofiltration

Anaira Román, University of Puerto Rico at Mayagüez, Chemical Engineering-Junior

Mentors: Dr. Miao Yu, USC Columbia, Chemical Engineering

Mr. Fanglei Zhou, USC Columbia, Chemical Engineering

5-Methanol electrooxidation performance of well-dispersed bimetallic catalysts from electroless deposition of Ru on high loading Pt/C prepared by electrostatic adsorption

Sebastián Torres Pacheco, University of Puerto Rico at Mayagüez, Chemical Engineering-Senior

Mentors: Prof. John Weidner, USC Columbia, Chemical Engineering

Prof. John Regalbuto, USC Columbia, Chemical Engineering

Dr. John Meynard Tengco, USC Columbia, Chemical Engineering

Mr. Drew Pereira, USC Columbia, Chemical Engineering

Thai Research Experiences for Undergraduates Program

6-Synthesis and Characterization of Gallium Zinc oxynitride thin films

Sadan Boochakiat, Chiang Mai University, Thailand, Chemistry-Senior

Mentor: Dr. Ben Meekins, USC Columbia, Chemical Engineering

7-Guided Mixed-oxide synthesis for Ethane Partial Oxidation

Teeraya Bureerug, Mahidol University, Thailand, Chemistry-Senior

Mentors: Prof. Jochen Lauterbach, USC Columbia, Chemical Engineering

Prof. Cun Wen, USC Columbia, Chemical Engineering

Mr. Juan Jimenez, USC Columbia Chemical Engineering

8-The Performance of Platinum Catalyst in Hybrid Sulfur Cycle

Harit Chunlim, Mahidol University, Thailand, Chemical Engineering-Senior

Mentors: Dr. John Weidner, USC Columbia, Chemical Engineering

Mr. Cody Wilkins, USC Columbia, Chemical Engineering

9-Development of continuous method for electroless deposition of Au shells on Pt metal cores for synthesis of bimetallic catalysts

Methasit Juthathan, Mahidol University, Thailand, Chemistry-Senior

Mentors: Prof. John Monnier, USC Columbia, Chemical Engineering

Mr. Greg Tate, USC Columbia, Chemical Engineering

10-Graphene Based Photocatalysts for Water Treatment

Witchaya Phasayavan, Chiang Mai University, Thailand, Chemistry-Senior

Mentors: Prof. Christopher Williams, USC Columbia, Chemical Engineering

Mr. Nabi Shakouri, USC Columbia, Chemical Engineering

11-High loading, high dispersion carbon supported Pt and Ru catalysts prepared by Strong Electrostatic Adsorption

Natthapong Pongpichayakul, Chiang Mai University, Thailand, Chemical Engineering-Senior

Mentors: Prof. John Regalbutto, USC Columbia, Chemical Engineering

Dr. John Meynard Tengco, USC Columbia, Chemical Engineering

Science, Technology, Engineering and Math

12-Effect of Particle Size on Activity of Nickel Based Tri-Reforming Catalysts

Bradie Crandall, USC Columbia, Chemical Engineering-Junior

Mentor: Dr. Erdem Sasmaz, USC Columbia, Chemical Engineering

13-The Effect of Combustion Temperature on the Band Gap of Gallium Zinc Oxysulfide

Samuel Bauknight, USC Columbia, Chemical Engineering-Junior

Mentor: Dr. Benjamin Meekins, USC Columbia, Chemical Engineering

14-The Effects of the Synthesis Temperature on the Pyrolytic Formation of Oxynitride Photocatalysts

Austin Kennedy, USC Columbia, Chemical Engineering-Sophomore

Mentor: Dr. Benjamin Meekins, USC Columbia, Chemical Engineering

15-Understanding Informal Environmental Education for Tourists in Saint Lucia

Max Ciarlone, USC Columbia, Environmental Science-Senior

Mentor: Dr. Conor Harrison, USC Columbia, Geography

16-Photometry of Gravitationally Lensed Supernova Nebra

Annastasia Haynie, USC Columbia, Physics-Senior

Mentor: Dr. Steve Rodney, USC Columbia, Physics and Astronomy

17-Analyzing microplastic accumulation in marine sediments influenced by derelict lobster traps in Winter Harbor, Maine

Victoria Mangus, USC Columbia, Marine Science-Senior

Ashton Ritchie, USC Columbia, Marine Science-Senior

Mentor: Dr. Joe Jones, USC Columbia, Environment and Sustainability

18-Sub-bottom Profiling of the Ocean Floor using CHIRP Data

Jahleel Stone, USC Columbia, Geophysics-Junior

Jeremy Pettigrew, USC Columbia, Geophysics-Sophomore

Mentor: Dr. Camelia Knapp, USC Columbia, School of the Earth, Ocean and Environment

Health Sciences and Psychology

19-Identifying leptin-sensitive neurons in the rat brain

Kayla Blankenship, College of Charleston, Biology-Sophomore (Summer Internship for Undergraduates)

Mentor: Dr. Claudia Grillo, USC Columbia, Pharmacology, Physiology and Neuroscience

20-The Impact of Leptin and Serotonin on Feeding Behavior

Jensen Tomberlin, College of Charleston, Psychology-Senior (Summer Internship for Undergraduates)

Mentor: Dr. Claudia Grillo, USC Columbia, Pharmacology, Physiology and Neuroscience

21-A comparison of dietary assessment from two electronic records during behavioral weight loss interventions

Destiny Byrd, USC Columbia, Public Health-Senior

Mentors: Dr. Gabrielle Turner-McGrievy, USC Columbia, Health Promotion Education and Behavior

Mrs. Caroline Dunn, USC Columbia, USC Columbia, Health Promotion Education and Behavior

Mrs. Alycia Boutte, USC Columbia, Health Promotion Education and Behavior

Dr. Sara Wilcox, USC Columbia, Exercise Science

22-Evaluating the Narrative Characteristics of an HIV Prevention Story Designed for African American Women

Chelsea Perry, USC Columbia, Public Health-Junior

Mentors: Dr. Alyssa Robillard, USC Columbia, Health Promotion Education and Behavior

Ms. Jamie Troutman, USC Columbia, Health Promotion Education and Behavior

23-Emotional Circuitry: An Anatomical Tract Tracing Study of the Amygdala

Mallory Long, USC Columbia, Psychology-Senior

Mentor: Dr. David Mott, USC Columbia, Pharmacology, Physiology and Neuroscience

24-Colorism among the Black Diaspora

Victory Agho, Columbia, Biological Sciences-Junior (Ronald E. McNair Postbaccalaureate Achievement Program)

Mentor: Dr. Cheryl Armstead, USC Columbia, Psychology

25-The Heart Speaks: Implications Caused by Dysfunction in Emotional Regulation are Predicted by Heart Rate Variability

Vincent Edwards, USC Columbia, Psychology-Senior (Ronald E. McNair Postbaccalaureate Achievement Program)

Mentor: Dr. Cheryl Armstead, USC Columbia, Psychology

USC Connect

26-Small Steps to Make a Big Difference

Amy Grant, USC Columbia, Exercise Science-Senior

Mentor: Ms. Theresa Harrison, USC Columbia, USC Connect

27-How exercise has shaped my education

Charlotte Pardales, USC Columbia, Exercise Science-Senior

South Carolina Alliance for Minority Participation

28-AR Genome Viewer / Aphasia Treatment Game

Cardi Ireland, Midlands Technical College, Computer Science-Junior

Mentor: Dr. Jeremiah Shepherd, USC Columbia, Computer Science and Engineering

29-Gypsum in soil deposits

Javonte Isaac, USC Columbia, Civil Engineering-Senior

Mentor: Dr. Charles Pierce, USC Columbia, Civil and Environmental Engineering

30-Asymmetric Trifluoromethylation

Mia Jeanty, USC Columbia, Chemistry-Junior

Mentor: Dr. Sheryl Wiskur, USC Columbia, Chemistry and Biochemistry

31-Aerospace AFP Innovation

Denzel Martin, Midlands Technical College, Electrical Engineering-Sophomore

Mentor: Dr. Ramy Harik, USC Columbia, Mechanical Engineering

32-Structural Calculation from NMR data

Caleb Parks, USC Columbia, Computer Science-Junior

Mentor: Dr. Homayoun Valafar, USC Columbia, Computer Science and Engineering

33-Intersectionality Between Mathematics and Biology Using Matlab GUIs

Caleb Simmons, USC Columbia, Mathematics-Senior

Mentor: Dr. Paula Vasquez, USC Columbia, Mathematics

Center for Colon Cancer Research: Summer Undergraduate Minority Research Program

34-RNA interference of DDX24 in HCT116 and HT29 colon cancer cells

Zachary Gómez, Universidad Metropolitana, Biochemistry and Molecular Biology-Junior

Mentors: Dr. Michael Wyatt, USC Columbia, Drug Discovery and Biomedical Sciences

Dr. Misha Shtutman, USC Columbia, Drug Discovery and Biomedical Sciences

Mr. Jacob Massey, USC Columbia, Drug Discovery and Biomedical Sciences

35-Protein-Protein Interaction Analysis of RNF138 and RAD51D using the Yeast Two-Hybrid Model

Josue Gonzales, North Greenville University, Biological Sciences-Senior

Mentor: Dr. Douglas Pittman, USC Columbia, Drug Discovery and Biomedical Sciences

Ms. Nicole Reilly, USC Columbia, Drug Discovery and Biomedical Sciences

36-Knockout of human CTC1 results in DNA damage and growth arrest

Sasha Hodge, Elizabeth City State University, General Biology-Senior

Mentor: Dr. Jason Stewart, USC Columbia, Biological Sciences

Ms. Stephanie Ackerson, USC Columbia, Biological Sciences

37-Identifying a role for the ITCH E3 ubiquitin ligase in intestinal stem cell maintenance

Lisette Payero, USC Aiken, Biology-Senior

Mentors: Dr. Lydia Matesic, USC Columbia, Biological Sciences

Mrs. Heather Mentrup, USC Columbia, Biological Sciences

38-TGF- β RIII Distribution and Expression in Colon Cancer and its impact on Wnt signaling

Amani Rashad, Fayetteville State University, Chemistry-Junior

Mentors: Dr. Mythreye Karthikeyan, USC Columbia, Chemistry and Biochemistry

Ms. Laura Jenkins, Chemistry and Biochemistry

39-Lewis lung carcinoma induced cachexia; the role in skeletal muscle protein turnover in the female mouse

Austin White, USC Columbia, Public Health-Junior

Mentor: Dr. James Carson, USC Columbia, Exercise Science

Research Experiences for Undergraduates: Applied Computational Robotics

40-Developing A Telepresence Simulation For Older Adults

Cynthia Aguilon, University of Texas, Computer Science-Junior

Lauren Nix, USC Columbia, Computer Science-Junior

Amanda Brummett, USC Columbia, Computer Information Systems-Senior

Mentors: Dr. Jenay Beer, USC Columbia, Computer Science and Engineering

Mrs. Xian Wu, USC Columbia, Computer Science and Engineering

41-Aggregating Micro-Robots in Curved Environments

Jodine Cruz, Wofford College, Mathematics-Senior

Mentors: Dr. Jason O'Kane, USC Columbia, Computer Science and Engineering

Mr. Jeremy Lewis, USC Columbia, Computer Science and Engineering

42-Creating an autonomous platform for monitoring aquatic environments

Anthony Grueninger, Rose-Hulman Institute of Technology, Electrical Engineering-Junior

Mentor: Prof. Ioannis Rekleitis, USC Columbia, Computer Science and Engineering

43-Shipwreck Mapping: Combining Local and Global Optimization

Jordan Miller, Austin Peay State University, Computer Science-Junior

Mentors: Dr. Ioannis Rekleitis, USC Columbia, Computer Science and Engineering

Dr. Alberto Quattrini Li, USC Columbia, Computer Science and Engineering

Ms. Sharmin Rahman, USC Columbia, Computer Science and Engineering

44-Designing and Evaluating a Telepresence User Interface for Older Adults

Elle Oltman, City College of San Francisco, Computer Science-Sophomore

Mentors: Dr. Jenay Beer, USC Columbia, Computer Science and Engineering

Mrs. Xian Wu, USC Columbia, Computer Science and Engineering

45-From Templates to Turtlebots

Xavier Osta, Texas A&M University, Computer Science-Junior

Mentors: Dr. Jason O'Kane, USC Columbia, Computer Science and Engineering

Mr. Shervin Ghasemlou, USC Columbia, Computer Science and Engineering

46-Surveying Abandoned Mines Via Autonomous Drones

Cecelia Paciaroni, Fort Lewis College, Engineering-Junior

Mentors: Dr. Ioannis Rekleitis, USC Columbia, Computer Science and Engineering

Dr. Alberto Quattrini Li, USC Columbia, Computer Science and Engineering

47-Kinodynamic Motion Planning with RRTs

Brooke Thornell, Francis Marion University, Computer Science-Freshman

Mentors: Dr. Jason O'Kane, USC Columbia, Computer Science and Engineering

Mr. Jeremy Lewis, USC Columbia, Computer Science and Engineering

48-Predicting the Path of Dynamic Obstacles

Stewart Wallace, Francis Marion University, Computer Science-Senior

Mentors: Dr. Jason O'Kane, USC Columbia, Computer Science and Engineering
Mr. Jeremy Lewis, USC Columbia, Computer Science and Engineering

Research Experiences for Undergraduates: Radioecology

(USC Upstate, University of Georgia and Savannah River Ecology Laboratory)

49-Hg and Cs-137 concentrations among tissues of Florida green watersnakes (*Nerodia floridana*) inhabiting former nuclear reactor cooling reservoirs

Kip Callahan, USC Upstate, Biology-Junior

Melissa Lech, USC Upstate, Biology-Senior

Mentors: Mr. James Leaphart, University of Georgia, Warnell School of Forestry and Natural Resources

Dr. Melissa Pilgrim, USC Upstate, Natural Sciences & Engineering

Dr. Tracey Tuberville, University of Georgia Savannah River Ecology Lab

50-The Fate of Mercury (Hg) in Ephemeral Wetlands

Demetrius Calloway, Fort Valley State University, Animal Science-Junior

Mentors: Ms. Cara Love, University of Georgia

Mr. David Scott, University of Georgia

Dr. Stacey Lance, University of Georgia

51-Assessing contamination distributions in *Micropterus salmoides* using non-lethal and lethal sampling methods.

Michael Christianson, USC Aiken, Biology-Senior

Mentors: Brooke Lindell, College of Charleston, Biology

Dr. Olin E. Rhodes, Savannah River Ecology Laboratory, University of Georgia

Mr. Dean E. Fletcher, Savannah River Ecology Laboratory, University of Georgia

52-Assessing radiocesium in various biota in unstudied reaches of the R-canal system

Elizabeth DiBona, Presbyterian College, Biology-Senior

Mentors: Mr. Larry Bryan, University of Georgia, Savannah River Ecology Laboratory

Ms. Alexis Korotas, University of Georgia, Savannah River Ecology Laboratory

53-Comparison of contaminant accumulation in reservoir fishes of different trophic levels and habitats

Jessica Gray, University of Georgia, Environmental Engineering-Senior

Mentors: Ms. Brooke Lindell, University of Georgia, Savannah River Ecology Laboratory

Mr. Paul Stankus, University of Georgia, Savannah River Ecology Laboratory

Dr. Olin E. Rhodes, University of Georgia, Savannah River Ecology Laboratory

Mr. Dean E. Fletcher, University of Georgia, Savannah River Ecology Laboratory

54-Impact of Radionuclides and Heavy Metals on Antibiotic Resistance in Sediment and Water Column Bacteria

Jacob Jakielaszek, Temple University, Bio Engineering-Junior

Mentors: Mr. Larry Bryan, University of Georgia, Savannah River Ecology Laboratory

Dr. J Vaun McArthur, University of Georgia, Savannah River Ecology Laboratory

55-The relationship between nitrogen isotopic composition and mercury and radiocesium concentrations in *Nerodia floridana*.

Melissa Lech, USC Upstate, Biology-Senior

Mentors: Dr. Tracey Tuberville, University of Georgia, Savannah River Ecology Lab

Dr. Melissa Pilgrim, USC Upstate, Natural Sciences & Engineering

56-Impact of Biomineralization of Organophosphates on Uranium Availability in Riparian Sediments

Robert Lewis, Florida A&M University, Environmental Science-Junior

Mentors: Dr. John Seaman, University of Georgia, Savannah River Ecology Lab

Ms. Fanny Coutelot, University of Georgia

57-The impact of contaminants on growth, development, and disease susceptibility of Southern toads

Mariela Muniz-Gonzalez, USC Aiken, Biology-Senior

Mentors: Dr. Stacey Lance, Savannah River Ecology Lab

Ms. Julie Ziemba

58-The Effects of Mercury and Radiocesium on the Probability of Hemoparasite Infections in *Nerodia floridana*

Caleigh Quick, SUNY College of Environmental Science and Forestry, Biotechnology-Senior

Mentors: Mr. David Haskins, University of Georgia, Savannah River Ecology Laboratory

Dr. Melissa Pilgrim, USC Upstate, Natural Sciences & Engineering

Dr. Tracey Tuberville, University of Georgia, Savannah River Ecology Laboratory

59-Effects of methylmercury on early life mortality of yellow fever mosquitoes (*Aedes aegypti*)

Manette Tanelus, USC Upstate, Biology-Junior

Mentor: Dr. Guha Damarajan, University of Georgia, Savannah River Ecology Laboratory

Eric Tokuyama, Colorado State University, Environmental Health-Senior

60-Comparison of contaminant accumulation among functional feeding groups of stream macroinvertebrates

Eric Tokuyama, Colorado State University, Environmental Health-Senior

Mentors: Mr. Dean Fletcher, University of Georgia, Savannah River Ecology Laboratory

Dr. J Vaun McArthur, University of Georgia, Savannah River Ecology Laboratory

Mr. Paul Stankus, University of Georgia, Savannah River Ecology Laboratory

Ms. Brooke Lindell, University of Georgia, Savannah River Ecology Laboratory

61-Impacts of Chronic Exposure to Gamma Radiation on the DNA Methylome using the Medaka Fish Model

Collin Topolski, Embry-Riddle Aeronautical University, Aerospace Engineering-Junior

Mentor: Dr. Benjamin Parrott, University of Georgia, Savannah River Ecology Laboratory

62-Accumulation of Radiocesium in Bullfrog Tadpoles (*Lithobates catesbeinus*) in a Contaminated Effluent Canal on the SRS

Kaitlin Wilms, Texas Tech University, Natural Resource Management- Wildlife Biology-Senior

Mentors: Dr. James Beasley, University of Georgia, Savannah River Ecology Laboratory

Mr. James Leaphart, University of Georgia, Savannah River Ecology Laboratory

Mr. Albert Bryan

South Carolina Advancing Diversity in Aging Research Program

63-The aging process of *Caulobacter* in different Environmental conditions

Kristy Abney, Allen University, Biological Sciences-Senior

Mentor: Dr. Bert Ely, USC Columbia, Biological Sciences

64-Breathe EASIER: Advancing Quality Lung Cancer Survivorship

Dane Acena, Benedict College, Computer Science-Senior

Mentors: Dr. Jenay Beer, USC Columbia, Computer Science and Engineering

Dr. Karen McDonnell, USC Columbia, Nursing

65-Communicative Function in Aphasia

Chandler Bright, Claflin University, Biological Sciences-Junior

Mentor: Dr. Julius Fridriksson, USC Columbia, Communication Sciences and Disorders

66-Gum Disease in Stroke Patients

Nneora Ezeanya, Allen University, Biology-Junior

Mentor: Dr. Souvik Sen, USC Columbia, School of Medicine, Department of Neurology.

67-A review of Alzheimer's disease focused mobile applications (apps)

Victor Ezeanya, Allen University, Computer Science-Sophomore

Mentors: Dr. Daniela Friedman, USC Columbia, Health Promotion Education and Behavior

Dr. Seul Ki Choi, USC Columbia, Health Promotion Education and Behavior

68-Investigation of Apoptotic Signaling Pathways Elicited by Alzheimer's Disease Amyloid β -Protein

Ishawn Francis, Claflin University, Biology-Junior

Mentor: Dr. Melissa Moss, USC Columbia, Biomedical Engineering

69-Designing of Graphical User Interface for Fall Identification Systems

Haregot Gebreyesus, Benedict College, Electrical Engineering-Senior

Mentor: Dr. Juan Caicedo, USC Columbia, Civil and Environmental Engineering

70-Uncovering the Association Between Muscle Wasting and Fractures

Hana Hailu, Benedict College, Computer Engineering-Junior

Mentors: Dr. Neset Hikmet, USC Columbia, Integrated Information Technology

Dr. Benjamin Schooley, USC Columbia, Integrated Information Technology

71-Investigation of Aryl Hydrocarbon receptor (AhR) Ligands on Thymic Development

Dominique Jackson, Claflin University, Biochemistry and Molecular Biology-Senior

Mentor: Dr. Narendra Singh, USC Columbia, Pathology Microbiology and Immunology

72-Effect of aging on visual function of four different clones of Daphnia

Syeda Madiha, Claflin University, Biological Sciences-Junior

Mentor: Dr. Jeff Dudycha, USC Columbia, Biological Sciences

73-Exploratory Data Analytics and Visualization of Characteristics of Sarcopenia Patients in South Carolina: A Data Science Lite Approach

Rajendra Neupane, Benedict College, Biological Sciences-Junior

Mentor: Dr. Benjamin Schooley, USC Columbia, Integrated Information Technology

74-Effects of aryl hydrocarbon receptors (AHR), ligands (Resveratrol, TCDD, and FICZ) on the development of T-helper cells in lymphoid organ (spleen)

Steilan Sumpter, Claflin University, Biological Sciences-Senior

Mentor: Dr. Narendra Singh, USC Columbia, Pathology Microbiology and Immunology