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Mark Davis

GEORGIA ACADEMY OF SCIENCE

ANNUAL MEETING
APRIL 16TH-17TH
VIRTUAL
PROGRAM

CONTENTS

March 26, 2021

Dear Colleagues of the Academy and Guests,

Welcome to the 2021Annual Meeting of the Georgia Academy of Science. The 2021 meeting is a landmark for the Academy, our first virtual meeting prompted by the pandemic. I confess that I hope it's also the last virtual meeting and that all future meetings will be in-person. The 2022 Annual Meeting is scheduled to be held at Valdosta State University.

I am extremely proud of students and faculty who are presenting this year, despite the obstacles to scholarly work imposed by the pandemic. It is testimony to the strength of scientific inquiry in the face of many unforeseen obstacles. We are fortunate to have approximately 35 oral presentations and 15 posters at this year's meeting.

I thank the *ad hoc* Virtual 2021 Annual Meeting Committee for their work in organizing the 2021 meeting: Meg Smith, Paul Arnold, Michael Bender, Amanda Duffus, Al Mead, and Nick Sterling. I especially thank Meg Smith whose efforts as Committee Chair and the Academy's liaison with ForagerOne have been exemplary. I also thank Trinanjan Datta for his work as the new editor of the Georgia Journal of Science and the members of the Council for their service.

I encourage authors who are presenting completed work this year to consider submitting a manuscript to the Georgia Journal of Science for publication consideration. I hope authors who are presenting works in progress will continue their research and return next year to present their final results.

As we celebrate the scholarly achievements of Academy members at this meeting, it is important to remember that that the continued success of the Academy is contingent upon recruiting new members. Please encourage colleagues who are not members to join the Academy. A growing membership helps ensure our continued success in serving as ambassadors to scientific inquiry and enhancing the scientific literacy of the citizens of Georgia.

At the close of this meeting, I complete my term as President of GAS and pass the gavel, virtually, to the competent hands of Amanda Duffus. I know that she will serve the Academy admirably. It has been a genuine pleasure to serve as President. Many individuals have assisted me the past two years, too many to list individually. I am very grateful for their support and to them I extend my heartfelt thanks.

Sincerely,

Mark S. Davis
President, Georgia Academy of Science

2021 Annual Meeting of the Georgia Academy of Science

Friday, April 16, 2021

3:30pm – 6:00pm (Section IV Only)

4:00pm – 6:00pm (Section I, Section II, Section VII and Section VIII)
Oral Presentations on Zoom (link below and on Symposium)

4:00pm – midnight
Poster Presentations in all sections available on Symposium

6:00pm – 7:00pm
Virtual 'Happy Hour' on Zoom (link on Symposium)

Saturday, April 17

9:00am – 11:00am (Section III, Section IV, Section V, Section VI)
Oral Presentations on Zoom (link below and on Symposium)

11:00am – noon
All section business meetings (link on Symposium)

12:00pm-1:00pm
Council business meeting (link on Symposium)

12:00am – midnight
Poster Presentations in all sections available on Symposium

FRIDAY PAPER PRESENTATIONS

All Friday (April 16th) sessions will run concurrently in breakout sessions on Zoom.
https://ung.zoom.us/j/97341064326?pwd=ODI2eHdtRS82aE9ZS3phcWtwREd6Zz09
Meeting ID: 973 4106 4326 Passcode: 663455

Sessions start at 3:30pm for Section IV and 4:00pm for sections I, II, VII and VIII. Presentations will be given in the order listed below each section.

***Denotes student presenter**
**** Denotes student research in progress**

Section I: Biological Sciences
David Patterson, Presiding

ECOTOXICOLOGICAL EFFECTS OF LITHIUM CHLORIDE ON LYNGBYA WOLLEI**, Braxton Crews*, James Nienow

COMPARISON OF GROWTH RATES OF ALABAMA BASS (MICROPTERUS HENSHALLI) AMONG THREE NORTH GEORGIA RESERVOIRS ACROSS TWO SAMPLING YEARS**, Elizabeth Howell*, Thomas Campbell*

THE EFFECTS OF MICROPLASTICS ON SEA URCHIN LARVAL SURVIVORSHIP AND DEVELOPMENT**, Natalie Macy*, Margaret Smith

Section II: Chemistry
Charles Swore, Presiding

DIGITAL TEXTBOOK FOR SURVEY OF CHEMISTRY I & II**, Antara Dutta, Maher Atteya, Abdullah Baosman, Jerry Poteat

EXTRACTION AND ANALYSIS OF PHYTOCOMPOUNDS FROM HUNTERIA UMBELLATE, Tolulope Salami, Olusola Ladokun,

SYNTHESIS OF HYDROGELS VIA UV PHOTO-INITIATED POLYMERIZATION AND THEIR APPLICATIONS, Jason Gajda*, Allegra Mbwetshangol*, William Yoon*, Kiana Treaster*, Seungjin Lee

RESEARCH TO ESTABLISH IF THE LEVELS OF NITRITE IN LAKE CHATUGE ARE IN A DEPENDENT RELATIONSHIP WITH THE LEVELS OF POLLUTION**, Colton Pritchett*, Mikalia Chappelear*

Section IV: Physics/Math/Computer Science/Engineering/Technology
Jay Dunn, Presiding

APPLICATION OF METAMATERIAL IN BLOCKING UNWANTED MICROWAVE SIGNALS, Allen J. Scott*, Arun K. Saha

MODELING BLENDED ABSORPTION TROUGHS IN NGC3783, Kristin Baker*, Jay P. Dunn, Braven Lyall

DETECTING UFOs IN FUSE SPECTRA OF SEYFERT GALAXIES, Annie Truong*, Jay P. Dunn, Alton Patrick

DEVELOPMENT OF AN AUTOGRADER FOR JAVA PROGRAMS, Noel A. Rojas Galviz*, David Gibson

QUANTUM THEORY OF CONTACT ELECTRIFICATION**,** Timothy J. Perkins*, Javier E. Hasbun, L.C. Lew Yan Voon, Morten Willatzen, Zhong Lin Wang

VALDOSTA SMART CITY PROJECT FOR IMPROVED TRAFFIC SAFETY: DATA ANALYSIS, David Yoo*, Dilan Boggs, Heung Jin Oh, Barry Hojjatie, Baanak Ashuri

COMPARISON OF EXTRACTION CHARACTERISTICS OF SECONDARY AND TERTIARY AMINES FOR DESALINATION, Diana Kem*, Abigail Budu, Seungjin Lee

MINIMALLY INVASIVE EARLY SCREENING POSSIBILITIES FOR CANCER USING ATR-FTIR SPECTROSCOPY, Nathan G. Grodzinsky*, Mathes Dayananda, Unil Perera

Section VII: Science Education
PaviElle M. Johnson, Presiding

CRITICAL MENTORING IN STEM LAB**, Manisha Maurya*

SELF CHECK QUIZZES FOR STUDENTS IMPROVE SCORES, Luise Ethelyn Strange de Soria

TRENCH REPORT OF TEACHING INTRO ASTRO ONLINE 20 YEARS. Ulrike Lahaise

Section VIII: Anthropology
Alice Gooding, Presiding

MIDDLE WOODLAND PERIOD SETTLEMENT HEIRARCHY IN THE ETOWAH RIVER VALLEY**, Bryan A. Moss*

IRONING OUT THE DATA: REACESSING CARBON-14 DATING IN SOUTHERIN IRON AGE INDIA**, Kathryn D. Yeomans*, Teresa P. Raczek

EXAMINING THE DIETARY BEHAVIOR OF AUSTRALOPITHECUS ROBUSTUS AND FOSSIL PRIMATES FROM SWARTKRANS, SOUTH AFRICA USING LOW-MAGNIFICATION STEROMICROSCOPY OF DENTAL MICROWEAR, Amanda K. Pregibon*, Frank L'Engle Williams

RECONSTRUCTION OF TREE SPECIES COMPOSITION OF PRE-SETTLEMENT FORESTS IN THE GREAT APPALACHIAN VALLEY OF GEORGIA FOR USE IN ECOLOGICAL, ETHNOHISTORICAL, AND ARCHEOLOGICAL RESEARCH **, Wayne Van Horne

SATURDAY PAPER PRESENTATIONS

All Saturday (April 17th) sessions will run concurrently in breakout sessions on Zoom.
https://ung.zoom.us/j/95664241291?pwd=dGQxdkxURGs3eWdQKoRzSktWdXhLZz09
Meeting ID: 956 6424 1291 Passcode: 514271

Sessions start at 9am for all sections and will be given in the order listed below each section.

***Denotes student presenter**
**** Denotes student research in progress**

Section III: Earth and Atmospheric Sciences Division
Samuel Mutiti, Presiding

CARBON AND OXYGEN ISOTOPE ANALYSIS OF PLEISTOCENE AMERICAN ALLIGATOR TEETH**, George A. Bennett* Alfred Mead, and David Patterson

SIZE ESTIMATES OF EXTINCT AQUATIC SNAKES FROM EOCENE OF CENTRAL GEORGIA, Colin Calvert*, Alfred Mead, and Denis Parmley

PLEISTOCENE RODENTS FROM SOUTHEAST GEORGIA, Rhinehart*, and Alfred Mead

DEVELOPMENT OF A HIGH THROUGHPUT MONITORING SYSTEM FOR THE PRESENCE OF CYANOBACTERIA**, Jessica L. Jones*, Bret A. White*, Monique N. Johnson*, and Julius E. Schneider

PROTECTION BY FRUCTOSE FROM DENATURATION OF PHYCOCYANIN BY OCTANOL**, Monique N. Johnson*, Carley K. Stapleton, Shanice McGuire, Joshua M. Horne and Julius E. Schneider

THE IMPACT OF PHOSPHATE REGULATIONS ON THE TOTAL PHOSPHORUS LEVELS IN THE LAKE LANIER WATERSHET FROM 1978-2020**, Anna K. Perry*, and Lori J. Wilson

Section IV: Physics/Math/Computer Science/Engineering/Technology
Jay Dunn, Presiding

MECHANICAL VIBRATIONS ATTENUATION BY GRANULAR MEDIA AT AUDIBLE FREQUENCIES FOR SPECIAL APPLICATIONS, Hasson M. Tavossi

WATER-GLYCEROL MIXTURE VISCOSITY THROUGH OPTICAL TRAPPING, Javier E. Hasbun, Suvranta K. Tripathy, James C. Howard

SOLUTION PROCESS TRIS (8-HYDROXYQUINOLINE) ALUMINUM THIN FILMS BY SPIN COATING TECHNIQUE: STATIC AND DYNAMIC DISPENSE METHODS, Zachary James Welchel, L. Ajith DeSilva

ECONOMIC DESIGN OF A MICROWAVE ABSORBER, Arun K. Saha, Walker G. Pendelton

HOW EFFECITVE IS THE RECTITATION IN INTRODUCTORY PHYSICS CLASSES?, K. S. Ranasinghe

J AND H FILTER BRIGHTNESS OF VENUS: 2014-2020, Richard Willis Schmude

DEVELOPMENT OF A CONNECTED VEHICLE TECHNOLOGY IN THE CITY OF VALDOSTA**, Barry Hojjatie, Baabak Ashuri, Pat Collins, Adrian Baker

Section V: Biomedical Sciences
Mark Hollier, Presiding

DETERMINING IF BURNT FOOD CAN INDUCE CYP1A1 EXPRESSION IN MOUSE HEPATOCYTES **, Carley Hiller, Jennifer Schroeder

USING BIOFLAVONOIDS TO INHIBIT CYP1A1 INDUCTION BY COMPONENTS OF COOKED CHICKEN, C. Greer, Jennifer Schroeder

Section VI: Philosophy and History of Science
Charmayne E. Patterson, Presiding

THE QUANTUM HYPOTHESES OF THE BOHR MODEL, A HISTORIC PERSPECTIVE, Peter Allen Roessle

STATISTICAL EXPLORATION OF THE DATA FOR THE GEORGIA MOUNTAIN FOOD BANK, Ping Ye

DR. CHARLES HENRY TURNER: A PIONEER IN ANIMAL COGNITION AND INTELLIGENCE, Ronald E. Mickens and Charmayne Patterson

POSTER PRESENTATIONS

Poster presentations will be available on the Symposium platform for the entire duration of the conference so you can visit them and leave comments as your time permits.

***Denotes student presenter**
**** Denotes student research in progress**

Section I: Biological Sciences

USING PROBABILISTIC CELLULAR AUTOMATA TO MODEL THE TRANSMISSION OF AN EMERGING INFECTIOUS DISEASE OF AMPHIBIANS, RANAVIRUS, IN THE UNITED KINGDOM**, Patricia L. Bartlett*, Joshua P. Standridge, John C. George, Amanda L.J. Duffus

PRELIMINARY ANALYSIS OF THE EFFECT OF TEMPERATURE ON OVERWINTERING PATTERNS IN EASTERN BOX TURTLES (TERRAPENE CAROLINA) **, Lauren A. Collins*, Abigail A. Neyer, Natalie L. Hyslop, Jennifer L. Mook

TESTING THE FIDELITY OF ENAMEL ISOTOPIC, ENVIRONMENTAL AND CLIMATIC VARIATION IN A LOCALIZED POPULATION OF WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS), Taylor Malasek*, Erin E. Barding, Michael Bender, Alfred J. Mead, Zachary Pilgrim*, Julia McManus*, Charles Bish*, Patrick Powers*, Jessica R. Patterson, David B. Patterson

THE EFFECTS OF LOW PH ON SEA URCHIN LARVAL SURVIVORSHIP AND DEVELOPMENT, Emily Pace*, Nancy Dalman

UNDERSTANDING BIODIVERSITY THROUGH TAXONOMIC TRAINING**, Sally Sir*, Kristine N. White

AN INVESTIGATION INTO *MARMOTA MONAX* BURROWS AND THEIR ROLE AS SHELTERS FOR MULTIPLE SPECIES**, Nicolas Szabo*, Erin E. Barding, Jessica R. Patterson

THE EFFECTIVENESS OF MIXTURES OF ELEMENTAL SULFUR WITH DEMETHYLATION INHIBITORS (DMI) AND QUINONE OUTSIDE INHIBITORS (QOI) ON THE MANAGEMENT OF RUST (*PUCCINIA ARACHIDIS*) OF PEANUT, Kenyanna Taylor*

INTEGRATIVE APPROACH FOR EVALUATING THE EFFECTS OF LANDSCAPE FEATURES ON SNAKE MOVEMENT BEHAVIOR: CASE STUDY WITH TIMBER RATTLESNAKES (*Crotalus horridus*) AND ROADWAYS**, Anna Tipton*, Dominic L. DeSantis

AN EVALUATION OF THE INFLUENCE OF LIGHT BAITS ON AQUATIC TURTLE TRAP SUCCESS**, Maggie Woodall*, Jenna Myers*, Danah Hunt*, Michael Bender, Jennifer Mook

GROUNDHOG (*MARMOTA MONAX*) BURROW SITE SELECTION BASED ON SOIL MOISTURE, PH, AND TEMPERATURE, Natalia I. Reyes*, Jessica R. Patterson, Erin E. Barding

Section II: Chemistry (No Poster Presentations)

Section III: Earth and Atmospheric Science

DEVELOPMENT OF A HIGH THROUGHPUT MONITORING SYSTEM FOR THE PRESENCE OF CYANOBACTERIA**, Jessica L. Jones*, Bret A. White*, Monique N. Johnson*, and Julius E. Schneider

Section IV: Physics, Math, Computer Science, Engineering and Technology (No Poster Presentations)

Section V: Biomedical Science

REACTION RATES TO VISUAL AND AUDITORY STIMULI IN NCAA BASEBALL PLAYERS **, Holden Baisden*, Chase E. Webb*, and Linda Jones

A NOVEL SCREENING METHOD FOR ORAL CANCER, Rachel Leggett *

Section VI: Philosophy and History of Science (No Poster Presentations)

Section VII: Science Education

COMBINING THE LIBERAL ARTS IN GENERAL BIOLOGY COURSES, Shuntele N. Burns

Section VIII: Anthropology (No Poster Presentation)