

2007

## 91st Annual Meeting, 2007. Program

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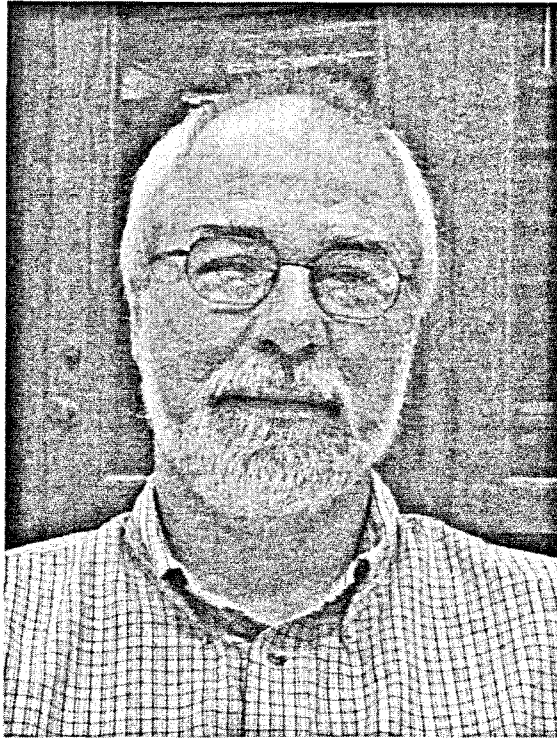
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# Keynote Speaker



## **THE NUCLEATION OF FIRST ORDER PHASE TRANSITIONS - FAHRENHEIT TO ARCTIC FISH -**

Ken Kelton, Arthur Holly Compton Professor, Department of Physics, Washington University

The word nucleus, defined by the Oxford English Dictionary as “the central and most important part of an object, movement, or group, forming the basis for its activity and growth”, was introduced into English usage early in the 18th century, derived from the Latin for kernel or inner part. In the 19th century it was adopted to describe a small region of a new phase appearing during a phase change such as melting or freezing. Such phase transitions are ubiquitous in the natural world and are hence important in a very wide range of scientific disciplines, including astrophysics, metallurgy, materials science, electronic engineering, atmospheric physics, mineralogy, chemical engineering, biology, food science and medicine. In this talk, I will trace the development of our understanding of nucleation processes, from the first systematic studies of Fahrenheit to our recent work on the coupling between liquid structures and the nucleation barrier. The importance of nucleation in biological systems and in food and drink will also be discussed briefly.

## SECTION PROGRAMS

\* Undergraduate \*\*Graduate

## ORAL PRESENTATIONS

(Speakers' Underlined)

Session I: Friday April 13, 1:00 p.m. – 3:00 p.m.

## Biology I (Eric Lovely, ATU)

## Main Conference Room

- 1:00 p.m. **EFFECTS OF HEAVY METALS ON MACROINVERTEBRATE COMMUNITIES IN HEADWATER STREAMS OF THE BUFFALO NATIONAL RIVER, ARKANSAS.** Erin Billings, Reid Adams, and Kristen Keteles, University of Central Arkansas
- 1:15 p.m. **GILLAM PARK WETLAND FISH COMMUNITY SURVEY.** Luke Driver, Ginny Adams, and Reid Adams, University of Central Arkansas, Conway AR, 72035
- 1:30 p.m. **PATTERNS OF MACROINVERTEBRATE COMMUNITY STRUCTURE AND DIVERSITY ACROSS A GRADIENT OF RIVER-FLOODPLAIN CONNECTIVITY.** Bradley S. Williams and S. Reid Adams, Department of Biology, University of Central, 201 Donaghey Ave., Conway, AR 72035
- 1:45 p.m. **MOIST SOIL SEED ABUNDANCE ON WRP WETLANDS IN ARKANSAS.** Benton Gann and Elizabeth Brennan, Arkansas Tech University, Russellville AR
- 2:00 p.m. **TEACHING EVOLUTION: CHALLENGING RELIGIOUS PRECONCEPTIONS.** Eric C. Lovely and Linda C. Kondrick, Arkansas Tech University
- 2:15 p.m. **EFFECTS OF ROAD CROSSINGS ON AQUATIC INSECT HABITAT AND DIVERSITY IN LOW-ORDER STREAMS.** J. Wesley Neal, Nathan J. Harris, Sathyan and Kumaran, David A. Behler, and Thomas J. Lang, University of Arkansas at Pine Bluff, 1200 North University Drive, Mail Slot 4912, Pine Bluff, AR 71601
- 2:30 p.m. **SUMMER FOOD HABIT OF YOUNG GRASS PICKEREL (ESOX AMERICANUS) AND WARMOUTH (LEPOMIS GULOSUS) FROM A COVE IN LAKE OUACHITA.** Christian Carroll, Renn Tumlinson, Henderson State University
- 2:45 p.m. **DEVELOPMENTAL DIFFERENCES IN LEAF TEMPERATURE, GAS EXCHANGE, AND PHOTOSYNTHETIC TEMPERATURE OPTIMA IN SUMAC.** John L. Snider and John S. Choinski Jr., University of Central Arkansas, Department of Biology, Conway, AR 72035

## Botany Symposium I (George Johnson, ATU)

## Lake House

- 1:00 pm **THE ARKANSAS VASCULAR FLORA PROJECT AND THE ARKANSAS HERBARIUM NETWORK: THE FLORA, THE DATABASE, AND EDUCATION AND OUTREACH PROGRAMS.** George P. Johnson, Herbarium, Department of Biological Sciences, Arkansas Tech University, Russellville, Arkansas 72801; and, Johnnie L. Gentry, University of Arkansas Herbarium, Department of Biological Sciences, Biomass Research Center 141, Fayetteville, Arkansas 72701.
- 1:15 pm **A FOOL RUSHES IN WHERE ANGELS FEAR TO TREAD: CRATAEGUS IN ARKANSAS.** George P. Johnson, Herbarium, Department of Biological Sciences, Arkansas Tech University, Russellville, Arkansas 72801.

1:30 pm **THE ROYAL RUBI III: A PRELIMINARY STUDY OF THE GENUS *RUBUS* (ROSACEAE) IN ARKANSAS.** Johnnie L. Gentry and Marisa A. Williams, University of Arkansas Herbarium, Department of Biological Sciences, Biomass Research Center 141, Fayetteville, Arkansas 72701.

1:45 pm **ECOLOGY AND CONSERVATION OF *SOLIDAGO OUACHITENSIS* (ASTERACEAE), OUACHITA GOLDENROD, AN ENDEMIC OF THE OUACHITA MOUNTAINS.** Robert McElderry, University of Arkansas Herbarium, Department of Biological Sciences, Biomass Research Center 141, Fayetteville, Arkansas 72701.

2:00 pm **WATER HYACINTH: AN EXPANDING THREAT.** Jeremy Whisenhunt, University of Arkansas Herbarium, Department of Biological Sciences, Biomass Research Center 141, Fayetteville, Arkansas 72701.

2:15 pm **A BOTANICAL AND ECOLOGICAL STUDY OF AN INVASIVE MINT, *PERILLA FRUTESCENS* (L.) BRITTON (LAMIACEAE).** Marisa A. Williams, University of Arkansas Herbarium, Department of Biological Sciences, Biomass Research Center 141, Fayetteville, Arkansas 72701.

## Mammalogy (Tom Nupp, ATU)

## Training Room A

- 1:00 p.m. **NOTES ON THE NATURAL HISTORY OF THE EASTERN SMALL-FOOTED BAT IN ARKANSAS.** David A. Saugey<sup>1</sup> and D. Blake Sasse<sup>2</sup>, <sup>1</sup>U.S. Forest Service, Ouachita National Forest, P.O. Box 189, Jesselville, AR 71949 <sup>2</sup>Arkansas Game and Fish Commission, 2 Natural Resources Drive, Little Rock, AR 72205
- 1:15 p.m. **WINTER MOVEMENTS AND ROOST SITE SELECTION OF EASTERN RED BATS IN CENTRAL ARKANSAS.** Bentley Reynolds and Thomas Nupp, Arkansas Tech University, Russellville, AR, 72801
- 1:30 p.m. **HABITAT FACTORS AFFECTING TRAP SUCCESS OF SWAMP RABBITS.** Blair Smyth, Karen B. Vale, and Robert E. Kissell, Jr. School of Forest Resources, University of Arkansas at Monticello, Monticello, AR 71656
- 1:45 p.m. **RECENT RECORDS OF THE DISTRIBUTION OF WOODCHUCKS (*MARMOTA MONAX*) IN ARKANSAS.** Todd Pennington<sup>1</sup>, Nichole Freeman<sup>1</sup>, Renn Tumlinson<sup>1</sup>, and D. Blake Sasse<sup>2</sup>, <sup>1</sup>Department of Biology, Henderson State University, Arkadelphia, AR 71999 <sup>2</sup>Arkansas Game and Fish Commission, #2 Natural Resources Drive, Little Rock, AR 72205
- 2:00 p.m. **POPULATIONS AND HABITAT SELECTION OF SMALL MAMMALS IN THE TALLGRASS PRAIRIES OF NORTHWESTERN ARKANSAS.** Eric B. Nelson, and Doug James, University of Arkansas Fayetteville, 113 Ozark Hall, 72701
- 2:15 p.m. **USE OF AERIAL THERMAL INFRARED VIDEOGRAPHY FOR MEDIUM-SIZED MAMMALS.** John Kidd and Robert E. Kissell, Jr. School of Forest Resources, University of Arkansas at Monticello, Monticello, AR 71656

## Arkansas Academy of Science

## Physics &amp; Engineering (Dan Bullock, ATU)

## Training Room B

- 1:00 p.m. **GROWTH RATE CALCULATIONS FOR NANOSTRUCTURES PRODUCED BY MOLECULAR BEAM EPITAXY (MBE).** Daniel Bullock, Department of Physical Science, Arkansas Tech University
- 1:15 p.m. **THERMOACOUSTIC QUALITY FACTOR ENHANCEMENT.** Holly Smith and William V. Slaton, University of Central Arkansas, Department of Physics & Astronomy, Conway, AR 72035
- 1:30 p.m. **EFFECT OF JUNCTION GEOMETRY ON AEROACOUSTIC EXCITATION.** Stephanie Lanier and William V. Slaton, University of Central Arkansas, Department of Physics & Astronomy, Conway, AR 72035
- 1:45 p.m. **LIQUID SOLUTION DEPOSITION OF ZINC OXIDE FILMS FOR OPTOELECTRONIC APPLICATIONS.** Matthew LeMay<sup>1</sup>, Robert Engelken<sup>1</sup>, David Harlan<sup>1</sup>, Michael Sattler<sup>1</sup>, Matthew Pruitt<sup>1</sup>, Aaron Archer<sup>1</sup>, and Dr. Tansel Karabacak<sup>2</sup> <sup>1</sup>Arkansas State University Optoelectronic Materials Research Laboratory and Environmental Science Graduate Program, State University (Jonesboro), AR 72467 <sup>2</sup>Department of Applied Science, University of Arkansas-Little Rock, Little Rock, AR 72204
- 2:00 p.m. **AEROACOUSTIC EXCITATION OF ACOUSTIC RESONANCE.** Christa Harbor and William V. Slaton, The University of Central Arkansas, Department of Physics & Astronomy, Conway, AR 72035
- 2:15 p.m. **ELECTRON SHOCK WAVES: IONIZATION RATE WITHIN THE DEBYE LAYER.** Michael Weller, Mostafa Hemmati, and Steven Summers Department of Physical Science, ATU, Russellville, AR 72801
- 2:30 p.m. **PHOTOCONDUCTANCE IN TUNGSTEN (IV) SULFIDE-POLYMER COMPOSITE FILMS.** David Harlan<sup>1</sup>, Robert Engelken<sup>1</sup>, Matthew Lemay<sup>1</sup>, Michael Sattler<sup>1</sup>, Matthew Pruitt<sup>1</sup>, Aaron Archer<sup>1</sup>, and Tom Jakobs<sup>2</sup>, <sup>1</sup>Arkansas State University Optoelectronic Materials Research Laboratory, and Environmental Science Graduate Program, P.O. Box 1740, State University, AR 72467, <sup>2</sup> InvoTek, Inc., 1026 Riverview Drive, Alma, AR 72921
- 2:45 p.m. **MEASUREMENT AND MODELING OF LIGHT TRANSMISSION THROUGH TURBID MEDIA.** Al Adams, Michael Fahrenwald, and Long Do, Department of Physics and Astronomy, University of Arkansas at Little Rock, 2801 S. University Avenue, Little Rock, AR 72204-1099

Session II: Friday April 13, 3:00 p.m. – 4:45 p.m.

## Botany Symposium II (George Johnson, ATU)

## Lake House

- 3:00 pm **THE VASCULAR FLORAS OF SCOTT AND YELL COUNTIES, ARKANSAS.** Brent Baker, University of Central Arkansas, Department of Biology, 201 Donaghey Ave., Conway, Arkansas 72035.
- 3:15 pm **DISTRIBUTION AND SEX RATIO OF THE ST. FRANCIS SUNKEN LANDS WMA POPULATION OF PONDBERRY (*LINDERA MELISSIFOLIA*).** Staria S. Vanderpool, Department of Biological Sciences, Arkansas State University, State University, Arkansas 72467; Jeremy L. Jackson, Jackson Environmental Consulting Services, LLC, 114 North 3rd Street, Suite 1, Richmond, Kentucky 40475; and, William D. Reed, Department of Biological Sciences, Arkansas State University, State University, Arkansas 72467.
- 3:30 pm **PRELIMINARY SURVEY OF THE *DESMODESMUS* (CHLOROPHYTA) OF LAKE CHICOT, INCLUDING ONE POSSIBLE NEW SPECIES.** Karen P. Fawley, Marvin W. Fawley, and Edmond J. Bacon, School of Mathematical

and Natural Sciences, University of Arkansas at Monticello, Monticello, Arkansas 71656; and, Eberhard Hegewald, Institute of Chemistry and Dynamics of the Geosphere III, Research Center Jülich, Germany.

- 3:45 pm **VASCULAR FLORA AND PLANT COMMUNITY INVENTORY OF SALINE COUNTY, ARKANSAS.** Theo Witsell, Arkansas Natural Heritage Commission, 1500 Tower Building, 323 Center St., Little Rock, Arkansas 72201.
- 4:00 pm ***HYPERICUM ADPRESSUM* BART. (CLUSIACEAE), CREEPING ST. JOHN'S WORT, NEW TO ARKANSAS AND THE OUACHITA MOUNTAINS.** Theo Witsell, Arkansas Natural Heritage Commission, 1500 Tower Building, 323 Center St., Little Rock, Arkansas 72201.
- 4:15-4:30 ***CENTAUREA STOEBE* SPP. *MICRANTHOS* (SPOTTED Knapweed) IN THE SOUTHERN OZARKS: CURRENT HABITAT AND DISTRIBUTION: AN ECOLOGICAL APPROACH.** Carey Minter, University of Arkansas Herbarium, Department of Biological Sciences, Biomass Research Center 141, Fayetteville, Arkansas 72701.

## Cell &amp; Molecular Biology (Ivan Still, ATU)

## Main Conference Room

- 3:00 p.m. **SIMIAN VARICELLA VIRUS EXPRESSES A LATENCY ASSOCIATED TRANSCRIPT IN NEURAL GANGLIA OF LATENTLY INFECTED MONKEYS.** Kara Davis, Yang Ou, and Wayne L. Gray, Dept. of Microbiology and Immunology, Univ. of Arkansas for Medical Sciences, Little Rock, AR 72205
- 3:15 p.m. **RECOMBINANT VARICELLA VACCINES EXPRESS RESPIRATORY SYNCYTIAL VIRUS ANTIGENS AND ARE IMMUNOGENIC IN VIVO.** Toby M. Ward, Kara A. Davis, and Wayne L. Gray, University of Arkansas for Medical Sciences, Little Rock, AR 72205.
- 3:30 p.m. **STRUCTURAL STUDIES OF BACTERIOPHAGE T4 HELICASE DDA.** Lauren P. Blair, Christopher R. Warthen, Alan J. Tackett, Kevin D. Raney, University of Arkansas for Medical Sciences
- 3:45 p.m. **CYP2E1 KINETIC STUDIES SUPPORT THE PRESENCE OF TWO BINDING SITES.** Sam L. Collom and Grover P. Miller, Department of Biochemistry, University of Arkansas for Medical Sciences
- 4:00 p.m. **COMPUTATIONAL DOCKING STUDIES IDENTIFY TWO DISTINCT BINDING SITES WITHIN THE CYP2E1 ACTIVE SITE.** Ryan Laddusaw, Marty Perry, and Grover P. Miller, Ouachita Baptist University

4:15 p.m. **WEE1A: TRANSLATIONAL CONTROL DURING OOCYTE DEVELOPMENT.** Derinda Fair, Robert Frank, Amon Holt, and Robert Gregerson, Lyon College

4:30 p.m. **INTERMITTENT HYPOXIA IN EGGS OF *AMBYSTOMA MACULATUM*: EMBRYONIC DEVELOPMENT AND EGG CAPSULE CONDUCTANCE.** J. Hunter Valls and Nathan E. Mills, Department of Biology, Harding University, Searcy, AR 72149, USA

## Chemistry (Anwar Bhuiyan, ATU)

## Training Room A

- 3:00 p.m. **CHARACTERIZATION OF STOICHIOMETRIC AND NON-STOICHIOMETRIC HYDROXYAPATITE BY RAMAN SPECTROSCOPY.** Franklin D. Hardcastle<sup>1,2</sup>, Brandon W. Holland<sup>1</sup>, and Alexandru S. Biris<sup>2</sup>, <sup>1</sup>Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801 <sup>2</sup>University of Arkansas at Little Rock, UALR Center of Nanotechnology, Graduate Institute of Technology, 2801 S. University Ave., Little Rock, Arkansas 72204

## Arkansas Academy of Science

- 3:15 p.m. **SYNTHESIS AND CHARACTERIZATION OF RUTHENIUM POLYPYRIDINE COMPLEXES** Robbie E. Davis and Anwar A. Bhuiyan, Arkansas Tech University, Russellville, AR 72801
- 3:30 p.m. **METAL CATALYZED TRANSFORMATION OF NITROAROMATICS TO ARYLISOCYANATES. A COMPUTATIONAL STUDY.** Abul B. Kazi, Department of Chemistry and Physics, University of Arkansas at Pine Bluff, Pine Bluff, AR 71601
- 3:45 p.m. **MIXED SOLVENT SOLUTION FOR CHEMICAL BATH DEPOSITION OF HIGHLY PHOTOCONDUCTIVE BISMUTH SULFIDE FILMS.** Michael Sattler, Robert Engelken, David Harlan, Matthew Lemay, Matthew Pruitt, and Aaron Archer Arkansas State University Optoelectronic Materials Research Laboratory, and Environmental Science Graduate Program, P.O. Box 1740, State University, AR 72467
- 4:00 p.m. **END-FUNCTIONALIZATION AS A METHOD FOR CREATING SELF SEALING CARBON NONOTUBES: A MOLECULAR DYNAMICS STUDY** Tiffany McSpadden, Anthony K. Grafton, Lyon College, Batesville Arkansas
- Astrophysics (Scott Austin, UCA) Training Room B**
- 3:00 p.m. **THE BIG PICTURE CONCERNING THE SMALL STUFF: AN OVERVIEW OF PARTICLE PHYSICS RESEARCH.** James R. Musser, Arkansas Tech University, 1701 North Boulder Avenue, Russellville AR, 72801-2222
- 3:15 p.m. **THE EDGE OF SPACE OVER ARKANSAS: ARKANSAS BALLOONSAT.** Tillman Kennon<sup>1</sup>, Ed Roberts<sup>2</sup>, and Martin Huss<sup>3</sup>,<sup>1</sup>Arkansas State University, PO Box 419, State University, AR 72467 <sup>2</sup>Pottsville High School, 63 West Cedar Street , Pottsville, AR 72858 <sup>3</sup>Arkansas State University, PO Box 599, State University, AR 72467
- 3:30 p.m. **MODELLING THE POST-IMPACT COOLING OF ASTEROID EJECTA.** Michael Hinds and Rick Ulrich, University of Arkansas, Space Center, MUSE 202, Fayetteville, AR 72701
- 3:45 p.m. **IMPROVEMENT OF MODERATE REDSHIFT QUASAR SURVEYS UTILIZING INFRARED AND OPTICAL DATA.** Ashley Stewart, Shelly Bursick, and Julia Kennefick University of Arkansas, Space Center, MUSE 202, Fayetteville, AR 72701
- 4:00 p.m. **LATE-TYPE NEAR-CONTACT BINARY [HH97] FS AUR-79** Scott Austin<sup>1</sup>, Jeff W. Robertson<sup>2</sup>, Chris Tycner<sup>3</sup>, Tut Campbell<sup>2</sup> and Kent Honeycutt<sup>4</sup>, <sup>1</sup>University of Central Arkansas, <sup>2</sup>Arkansas Tech University, <sup>3</sup>U.S. Naval Observatory, <sup>4</sup>Indiana University
- 4:15 p.m. **QUASAR VARIABILITY WITH THE NFO WEBSCOPE.** Josiah Walton and Julia Kennefick, University of Arkansas, Space Center, MUSE 202, Fayetteville, AR 72701
- 4:30 p.m. **MODELLING MARS: CULTURING OF METAL RESPIRING MICROORGANISMS.** Tanushree Thote and Mack Ivey, University of Arkansas, Space Center, MUSE 202, Fayetteville, AR 72701
- Session III: Saturday April 14, 8:30 a.m. – 10:30 a.m.**
- Aquatic Zoology (Tsunemi Yamashita, ATU) Training Room A**
- 8:30 a.m. **ANNOTATED CHECKLIST OF THE ISOPODA (SUBPHYLUM CRUSTACEA; CLASS MALACOSTRACA) OF ARKANSAS AND OKLAHOMA, WITH EMPHASIS UPON SUBTERRANEAN HABITATS.** Michael E. Slay<sup>1</sup>, G. O. Graening<sup>1</sup>, Danté B. Fenolio<sup>2</sup>, and Henry W. Robison<sup>3,1</sup> <sup>1</sup>Arkansas Field Office, The Nature Conservancy, 601 North University Avenue, Little Rock, AR 72205 <sup>2</sup>Department of Biology, University of Miami, 1301 Memorial Drive, Coral Gables, FL 33124 <sup>3</sup>P.O. Box 9354, Southern Arkansas University, Magnolia, AR 71754
- 8:45 a.m. **FIRST ARKANSAS RECORDS FOR WHITE PERCH MORONE AMERICANA (GMELIN),** Thomas Buchanan, University of Arkansas–Fort Smith, Robert Limbird and Frank Leone, Arkansas Game and Fish Commission
- 9:00 a.m. **A SURVEY OF POPULATION GENETIC MARKERS TO DISCRIMINATE POPULATION DIFFERENTIATION IN THE STARGAZING DARTER, PERCINA URANIDEA.** Tsunemi Yamashita, Katherine McArthur, and Ryan Snead, Department of Biological Sciences, Arkansas Tech University, Russellville, AR 72801
- 9:15 a.m. **FEEDING HABITS AND PARASITISM RATES OF THE GROTTO SCULPIN (COTTUS CAROLINAE): A TROGLOMORPHIC FISH SPECIES IN PERRY COUNTY** MISSOURI Joseph E. Gerken and Ginny L. Adams, University of Central Arkansas
- 9:30 a.m. **SIZE DISTRIBUTION OF SMALLMOUTH BASS (MICROPTERUS DOLOMIEU) FROM CROOKED CREEK IN NORTH CENTRAL ARKANSAS,** James Daly, Bruce DeYoung, and James Almond, University of Arkansas for Medical Sciences
- 9:45 a.m. **RELATIONSHIP OF POPULATION PARAMETERS OF CLINOSTOMUM MARGINATUM METACERCARIAL INFECTIONS IN SMALLMOUTH BASS FROM CROOKED CREEK ARKANSAS,** James Daly, Randall Keller, and Bruce DeYoung, University of Arkansas for Medical Sciences and Murray State University
- 10:00 a.m. **COMPARISONS OF PHYTOPLANKTON DIVERSITY FROM FOUR POOLS AT AN HISTORIC SALT-PRODUCTION SITE IN SOUTHERN ARKANSAS.** Troy Bray and Renn Tumilson, Department of Biology, Henderson State University, Arkadelphia, AR 71999
- 10:15 a.m. **ADDITIONAL GEOGRAPHIC DISTRIBUTION RECORDS OF THE GOLDSTRIPE DARTER, ETHEOSTOMA PARVIPPINNE (PERCIFORMES: PERCIDAE), IN ARKANSAS.** Chris McAllister, Chadron State College, Nebraska, Henry W. Robison, Southern Arkansas University, and Thomas M. Buchanan, UA-Fort Smith
- 10:30 a.m. **FLUCTUATIONS IN ZEBRA MUSSEL DENSITIES AND ASSOCIATED LIMNOLOGICAL CONDITIONS IN LAKE DARDANELLE, ARKANSAS.** Brandon K. Peoples and Joseph N. Stoeckel, Arkansas Tech University
- Biology II (Don Bragg, USFS) Training Room B**
- 8:30 a.m. **NOTABLE ENVIRONMENTAL FEATURES IN SOME HISTORICAL AERIAL PHOTOGRAPHS FROM ASHLEY COUNTY, ARKANSAS.** Don C. Bragg<sup>1</sup> and Robert C. Weih, Jr.<sup>2</sup>, <sup>1</sup>USDA Forest Service, Southern Research Station, P.O. Box 3516 UAM, Monticello, AR 71656 <sup>2</sup>Spatial Analysis Laboratory, School of Forest Resources, Arkansas Forest Resources Center, University of Arkansas-Monticello, P.O. 3468 UAM, Monticello, AR 71656
- 8:45 a.m. **DISTRIBUTION OF THE QUEEN SNAKE, REGINA SEPTEMVITTATA, IN ARKANSAS,** Jonathan Stanley and Stan Trauth, Arkansas State University

## Arkansas Academy of Science

9:00 a.m. RECORDS OF NESTING BY CLIFF SWALLOWS (PETROCHELIDON PYRRHONOTA) AND BARN SWALLOWS (HIRUNDO RUSTICA) IN SOUTHERN ARKANSAS, Renn Tumlinson, Henderson State University

9:15 a.m. STATUS OF BIRDS NEWLY RECORDED IN ARKANSAS SINCE 1985, Doug James, University of Arkansas

9:30 a.m. THE EFFECTS OF ROADWAYS ON NEST-SITE SELECTION OF BLANDING'S (EMYDOIDEA BLANDINGII) AND COMMON SNAPPING TURTLES (CHELYDRA SERPENTINA) IN NEBRASKA, Sara Ruane and Stephen Dinkelacker, University of Central Arkansas

9:45 a.m. POPULATION DEMOGRAPHICS OF THE ALLIGATOR SNAPPING TURTLE (MACROCHELYS TEMMINCKII): EVIDENCE FOR PAST OVEREXPLOITATION AND PRESENT RECOVERY, Christopher Howey and Stephen Dinkelacker, University of Central Arkansas

10:00 a.m. BOBWHITE NESTING AND BROOD REARING HABITAT USE IN RESPONSE TO HABITAT RESTORATION EFFORTS IN ARKANSAS. Kevin Labrum, Arkansas Tech University

**Molecular Biology & Physiology**  
(Lawrence Mwasi, UAPB)

**Main Conference Room**

8:30 a.m. DOMAINS OF CREB/ATF HETERODIMER ATF1-PCR1 THAT TRANS-ACTIVATE RECOMBINATION HOTSPOT ADE6-M26. Jun Gao, Mari K. Davidson, and Wayne P. Wahls, Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences, 4301 West Markham Street, Slot 516, Little Rock, AR 72205, U.S.A

8:45 a.m. CAN SINGLE-STRAND DNA NICKS INITIATE HOMOLOGOUS RECOMBINATION? Katie L. McCumpsey, Wayne P. Wahls, Mari K. Davidson, Dept. of Biochemistry and Molecular Biology, UAMS, 325 Jack Stephens Drive, Little Rock, AR 72205

9:00 a.m. DOES RNA METABOLISM PLAY A ROLE IN RECOMBINATION? Lindsay M. Bradshaw, Wayne P. Wahls, and Mari K. Davidson, Dept. of Biochemistry and Molecular Biology, UAMS, 325 Jack Stephens Drive, Little Rock, AR 72205

9:15 a.m. CHARACTERIZATION OF BACTERIOPHAGES OF PSEUDOMONAS SYRINGAE PV. TOMATO. Sara E. Prior, Amanda Andrews, and Russell O. Nordeen, University of Arkansas at Monticello

9:30 a.m. ULTRASTRUCTURAL CHANGE OF A TERPINOPHILIC ARTHROBACTER BACTERIA WHEN GROWN IN DIFFERENT CARBON SOURCE. Lawrence M. Mwasi, Department of Biology, University of Arkansas at Pine Bluff

9:45 a.m. EVALUATION OF SECONDARY METABOLITES OF INVASIVE AND NATIVE HONEYSUCKLE FLOWERS FOR ANTIMICROBIAL PROPERTIES. Sang Lee<sup>1</sup>, Tiffany Harris<sup>1</sup>, Umadevi Garimella<sup>2</sup>, Rajesh Nayak<sup>2</sup>, and John Choinski<sup>1</sup> <sup>1</sup>Department of Biology, University of Central Arkansas, Conway, AR <sup>2</sup>National Center for Toxicology Research, Jefferson AR

10:00 a.m. GLASS BEAD TRACHEOBRONCHIAL AIRWAYS MODEL FOR IN-VITRO STUDIES OF RESPIRATORY DRUG DELIVERY. Mohammed Ali, Malay K. Mazumder, Rama N. Reddy, Mariofanna Milanova, Jing Zhang, and Alexandru S. Biris, Donaghey College of Information Science and Systems Engineering, University of Arkansas at Little Rock, ETAS 575, 2801 S. University Ave., Little Rock, AR 72204, USA

10:15 a.m. 2-METHOXYESTRADIOL INHIBITS CALCIUM INFLUX IN PORCINE CORONARY ARTERIES. Keith Babbs and Dr. Brent Hill, University of Central Arkansas

**Plant Biology (Joe Winstead, SAU)**

**Hickory Lodge Atrium**

8:30 a.m. NATURALIZATION OF TUNGOIL TREE (ALEURITES FORDII HEMSL.) (EUPHORBIACEAE) IN ARKANSAS. Allen Leible, Nicole Freeman, Joslyn Hernandez, Chris Talley, and Brett Serviss, Henderson State University. Biology Department. P.O. Box H-7570, Arkadelphia, AR 71999-0001

8:45 a.m. EVALUATING THE RELATIONSHIPS BETWEEN SOIL AND FOLIAR NUTRIENT CONCENTRATIONS THROUGH THE USE OF CHEMICAL AND NEAR INFRARED SPECTROSCOPIC ANALYTICAL TECHNIQUES. Shane M. Foley, Robert L. Ficklin, and Robert E. Kissell, Jr., University of Arkansas-Monticello, School of Forest Resources, P.O. Box 3468-UAM, Monticello, AR 71656-3468

9:00 a.m. NEGUNDO CHASTE TREE (VITEX NEGUNDO L.) (VERBENACEAE) NEW TO THE ARKANSAS FLORA. <sup>1</sup>Nicole Freeman, <sup>1</sup>Joslyn Hernandez, <sup>1</sup>Allen Leible, <sup>1</sup>Chris Talley, <sup>1</sup>Brett Serviss, and <sup>2</sup>Brent Baker, <sup>1</sup>Henderson State University. Biology Department. P.O. Box H-7570, Arkadelphia, AR 71999-0001, <sup>2</sup>University of Arkansas. Herbarium. Biomass Research Room 141. Fayetteville, AR 72701

9:15 a.m. DISCOVERY OF A SECOND RECORD OF SEASIDE HELIOTROPE (HELIOTROPUM CURASSAVICUM) IN ARKANSAS. Renn Tumlinson and Brett E. Serviss, Dept. of Biology, Henderson State University, Arkadelphia, AR 71999

9:30 a.m. ASSESSING THE SPATIAL ACCURACY OF APPLANIX DSS™ MODEL-301 SENSOR STEREO IMAGERY USING A SURVEY GPS GROUND CONTROL NETWORK. Robert C. Weih, Jr.<sup>1</sup> and David W. Rowton<sup>2</sup>, <sup>1</sup>Spatial Analysis Laboratory, Arkansas Forest Resources Center, School of Forest Resources, 110 University Court, University of Arkansas at Monticello, Monticello, AR 71656 <sup>2</sup>Garland Farms, 52PR 1092 Garland City, AR 71839

9:45 a.m. DEVELOPING NEW PLANTING GUIDELINES FOR LOBLOLLY PINE ON SUBSOILED SITES IN ARKANSAS, Jamie Schuler, University of Arkansas at Monticello

10:00 a.m. FOREST STANDS AND DEVELOPMENT IN DISJUNCT MESIC HABITATS. Joe E. Winstead<sup>1</sup> and Michael E. Held<sup>2</sup>, <sup>1</sup>Dept. of Biology, Southern Arkansas University, Magnolia, AR 71754, <sup>2</sup>Dept. of Biology, Saint Peters College, Jersey City, NJ 07306

**Science Education (Wilson Gonzalez-Espada, ATU)**

**Lake House**

8:30 a.m. TEACHING-SPECIFIC AND GENERAL FACTORS INFLUENCING COLLEGE STUDENTS' PERCEPTIONS OF SCIENCE TEACHING AS A CAREER. Wilson J. Gonzalez-Espada and Linda C. Kondrick, Department of Physical Science, Arkansas Tech University, 1701 N. Boulder Avenue, Russellville, AR 72801

8:45 a.m. GUIDED EXPERIENCES IN PHYSICS INSTRUCTION: RATIONALE AND IMPLEMENTATION, Michelle Stone and Wilson J. Gonzalez-Espada, Department of Physical Science, Arkansas Tech University, 1701 N. Boulder Avenue, Russellville AR 72801

9:00 a.m. THE 2005-06 ARKANSAS SCIENCE SAFET FOR SECONDARY SCHOOLS, Jack Gerlovich<sup>1</sup>, Dennis McElroy<sup>1</sup>, Tillman Kennon<sup>1</sup> and Ann Ross<sup>3</sup>, <sup>1</sup>Drake University, <sup>2</sup>Graceland University, <sup>3</sup>Arkansas State University, PO Box 419, State University, AR 72467

## Arkansas Academy of Science

9:15 a.m. ENVIRONMENTAL SCIENCE AND CHEMISTRY AWARENESS PROJECT. Steve Zimmer, Math and Science Institute, Arkansas Tech University

## POSTER PRESENTATION ABSTRACTS

Friday April 13 (1:00-2:30, authors present 2:30-3:00)

- 01 A RECOGNITION AND DETECTION BACTERIAL SPORES IN FLUID FOOD MATRICES Paul Bobryshev, and Olga Tarasenko, M.D., Ph.D. Department of Biology, University of Arkansas at Little Rock, Little Rock, AR
- 02 A CHARACTERIZATION OF CALCIUM HYDROXY PHOSPHATE MATERIALS BY X-RAY DIFFRACTION Jerakaycia D. Boman<sup>1</sup>, Ryan J. Snead<sup>1</sup>, Franklin D. Hardcastle<sup>1,2</sup>, Brandon W. Holland<sup>1</sup>, Zhongrui Li<sup>2</sup>, and Alexandru S. Biris<sup>2</sup>. <sup>1</sup>Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801 <sup>2</sup>University of Arkansas at Little Rock, UALR Center of Nanotechnology, Graduate Institute of Technology, 2801 S. University Ave., Little Rock, Arkansas 72204
- 03 A ABUNDANCE AND DISTRIBUTION OF FISHES IN A FLOODPLAIN WETLAND MOSAIC OF THE MISSISSIPPI RIVER Lainy Burkard, S. Reid Adams, Ginny L. Adams, and Brad Williams University of Central Arkansas, Conway, AR 72035
- 04 A EFFECTS OF LIGHT REGIME AND SEASON OF CLIPPING ON THE GROWTH OF CHERRYBARK OAK, WHITE OAK, PERSIMMON, AND SWEETGUM SPROUTS Robert L. Ficklin<sup>1</sup> and Michael G. Shelton<sup>2</sup> <sup>1</sup>University of Arkansas at Monticello, 203 School of Forest Resources Bldg., Monticello, AR 71656 <sup>2</sup>USDA Forest Service, Southern Research Station, Monticello, AR 71656
- 05 A ESTROGEN METABOLITES ELICIT A GREATER ARTERIAL RELAXATION THAN ESTROGEN Sene Gebre, Edwin Muldrew, and Brent Hill University of Central Arkansas, Department of Biology, 201 Donaghey Avenue, Conway, AR, 72035
- 06 A LIST OF THE ANTS OF ARKANSAS POST NATIONAL MEMORIAL David M. General and Lynne C. Thompson Arkansas Forest Resources Center, School of Forest Resources, University of Arkansas at Monticello, Monticello AR 71656
- 07 A ANALYZING THE EFFECTS OF HURRICANE KATRINA ON SELECTED SPECIES Brian Hardaway, Stacy Landers, Sarah Thompson, Eric C. Lovely
- 08 A 2-METHOXYESTRADIOL'S ATTENUATION OF VASCULAR SPASMS Adam Cox, Paige Henry, Brent Hill
- 19 A FOURIER-TRANSFORM INFRARED SPECTROSCOPY (FTIR) OF CALCIUM HYDROXY PHOSPHATE BIOMATERIALS Brandon W. Holland<sup>1</sup>, Jerakaycia D. Boman<sup>1</sup>, Nathan W. Gray<sup>1</sup>, Franklin D. Hardcastle<sup>1,2</sup>, and Alexandru S. Biris<sup>2</sup> <sup>1</sup>Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801 <sup>2</sup>University of Arkansas at Little Rock, UALR Center of Nanotechnology, Graduate Institute of Technology, 2801 S. University Ave., Little Rock, Arkansas 72204

10 A GENETIC ANALYSIS OF A HISTONE H3 MUTANT IN YEAST AND ITS EFFECTS ON TRANSCRIPTION ELONGATION Joseph H. Holthoff, Chaela Sickbert, Hina Mehta, John Neis, Kacey Swindle, and Andrea Duina Hendrix College, Biology Department, Conway, AR 72032

11 A GROWTH INHIBITION OF PATHOGENIC BACTERIA BY *IPOMOEA BATATAS* (L.) LEAF Shahidul Islam University of Arkansas at Pine Bluff

12 A FOURCHE CREEK AND THE ARKANSAS MEADOW-RUE, *THALICTRUM ARKANSANUM* Brent Kelley Field Programs Coordinator, Audubon Arkansas, Heritage West, 201 East Markham Street, Suite 450, Little Rock, AR 72201

13 A STUDIES OF HARD AND SOFT TISSUE ELEMENTAL COMPOSITIONS IN MICE SUBJECTED TO SIMULATED MICROGRAVITY Ryan Lane<sup>1</sup>, Rahul Mehta<sup>1</sup>, Parimal Chowdhury<sup>2</sup>, Nawab Ali<sup>2</sup>, and Holly J. Jumper<sup>1</sup> <sup>1</sup>Department of Physics and Astronomy, Lewis Science Center 171, University of Central Arkansas, 201 Donaghey Avenue, Conway, AR 72035 <sup>2</sup>Physiology and Biophysics, University of Arkansas - Medical Sciences, 4301 W. Markham St., Little Rock AR 72205 <sup>3</sup>Graduate Institute of Technology, University of Arkansas at Little Rock, 2801 S. University Avenue, Little Rock AR 72204

14 A EFFECTS OF HURRICANE KATRINA ON SPECIES RICHNESS Shawn Little, Tanna Parks, Ana Ruiz, and Eric C. Lovely Department of Biological Sciences, Arkansas Tech University

15 A DECONTAMINATION OF BACTERIAL SPORES USING GLYCOSPRAY Samea Lone and Olga Tarasenko, M.D., Ph.D. Department of Biology, University of Arkansas at Little Rock, Little Rock, AR

16 A CNIDARIAN/DINOFLAGELLATE ENDOSYMBIONT MOTILITY Chris Merrick and Timothy Wakefield John Brown University 2000 University Street Siloam Springs, AR 72761

17 A PRODUCTION NITRIC OXIDE DEPENDS ON EXPOSURE TIME TO GLYCOCONJUGATES Ometra Okuwoash<sup>1</sup>, Lee Soderberg, Ph.D.<sup>2</sup>, and Olga Tarasenko, M.D., Ph.D.<sup>1</sup> <sup>1</sup>Department of Biology, University of Arkansas at Little Rock, Little Rock, AR <sup>2</sup>Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR

18 A THE DIRECT EFFECTS OF THE *M* INSECT RESISTANCE GENE IN TOMATO ON *ORIU* *INSIDIOSUS* G. R. Pallipparambil, F. L. Goggin, and T. J. Kring Dept. of Entomology, University of Arkansas, Fayetteville, Arkansas 72701

Saturday April 14 (8:30-11:00, authors 10:30-11:00)

01 B A NEW WAY OF THINKING ABOUT AGRICULTURE: CAN WE BURN WHAT WE EAT? Aaron A. Archer<sup>1</sup> and Robert D. Engelken<sup>2</sup> <sup>1</sup>Environmental Sciences Graduate Program, Arkansas State University, State University, AR 72467 <sup>2</sup>College of Engineering, Arkansas State University, State University, AR 72467

02 B SURVIVAL TIMES AND PHYSIOLOGICAL RESPONSES OF HATCHLING AMERICAN ALLIGATORS (*ALLIGATOR MISSISSIPPIENSIS*) TO FORCED SUBMERGENCE IN COLD, NORMOXIC WATER. Ruth Bland and Stephen Dinkelacker Department of Biology, University of Central Arkansas, Conway, AR 72035

## Arkansas Academy of Science

- 03 B** **THE EDGE OF SPACE OVER ARKANSAS: ARKANSAS BALLOONSAT** Tillman Kennon<sup>1</sup>, Ed Roberts<sup>2</sup>, Martin Huss<sup>3</sup>, Teresa Fuller<sup>1</sup>, and Jim Edge<sup>2</sup> <sup>1</sup>Arkansas State University, PO Box 419, State University, AR 72467 <sup>2</sup>Pottsville High School, 63 West Cedar Street, Pottsville, AR 72858 <sup>3</sup>Arkansas State University, PO Box 599, State University, AR 72467 <sup>4</sup>Cross County High School, Cherry Valley, AR <sup>5</sup>Little Rock Catholic High School, Little Rock, AR
- 04 B** **MOLECULAR DYNAMIC SIMULATION OF ION BOMBARDMENT ON FREE STANDING THIN-FILM DEVICES TO MINIMIZE STRESS INDUCED CURVATURE** Sachin Terdalkar, Sulin Zhang, and Joseph Rencis Department of Mechanical Engineering, University of Arkansas, Fayetteville, AR 72701
- 05 B** **SHAPING STUDENTS FOR SUCCESS IN THE SCIENCES** Sherry Gibbany, Laura Berry, and Sherri Townsend North Arkansas College
- 06 B** **CONTRIBUTIONS OF NOBEL LAUREATES TO INDUSTRIAL ENGINEERING** Josh Liu Department of Industrial Engineering, University of Arkansas
- 07 B** **STUDY OF THE SYNTHESIS AND CHEMISTRY OF VINYL ALLENE CARBONYL COMPOUNDS: PROBE INTO ELECTROCYCLIC RING CLOSURE AND THE SYNTHESIS OF PYRONES** Josh Liu Department of Industrial Engineering, University of Arkansas
- 08 B** **THE EFFECTS OF AIRBORNE POLLUTANTS ON CORTICOLOUS EUMYCETOZOANS AND LICHENS** Erica M. Nelson<sup>1</sup>, Dr. Rodney K. Nelson<sup>1</sup>, Dr. Steve Stephenson<sup>2</sup>, and Dr. Lynda P. Nelson<sup>3</sup> <sup>1</sup>Department of Biology, UAFS, Fort Smith, AR 72913 <sup>2</sup>Department of Biology, UAF, Fayetteville, AR <sup>3</sup>Department of Chemistry, UAFS, Fort Smith, AR 72913
- 09 B** **USING HIERARCHICAL FEATURE EXTRACTION TO BUILD A LANDCOVER/LANDUSE MAP FOR THE BUFFALO RIVER SUB-BASIN** Robert C. Weih, Jr. Spatial Analysis Laboratory, Arkansas Forest Resources Center, School of Forest Resources, 110 University Court, University of Arkansas at Monticello, Monticello, AR. 71656
- 10 B** **ANT COLLECTING AT ARKANSAS POST NATIONAL MEMORIAL** Lynne C. Thompson and David M. General Arkansas Forest Resources Center, School of Forest Resources, University of Arkansas- Monticello, Monticello, AR 71656
- 11 B** **EFFECTS OF HARVESTING TREATMENTS ON ANT ASSEMBLAGES IN A MISSISSIPPI RIVER BOTTOMLAND HARDWOOD FOREST IN WEST-CENTRAL MISSISSIPPI** Lynne C. Thompson and David M. General Arkansas Forest Resources Center, School of Forest Resources, University of Arkansas- Monticello, Monticello, AR 71656
- 12 B** **SMALL MAMMAL COMMUNITY ASSOCIATIONS WITH TOPOGRAPHIC COMPLEXITIES ON A WETLAND RESTORATION SITE IN SOUTHEAST ARKANSAS** Tiffany Whitsitt and Philip A. Tappe School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas at Monticello, Monticello, AR 71655
- 13 B** **EFFICIENCY ADVANCES IN DUST MITIGATION TECHNOLOGY FOR APPLICATION ON MARTIAN SOLAR PANELS AND THEIR FUTURE IN FLEXIBLE ENVIRONMENTS** C Wyatt, R. Sharma, M. K. Mazumder, J. Zhang, P. K. Srirama and J. Robison, Department of Applied Science, University of Arkansas at Little Rock, Little Rock, AR 72204
- 14 B** **DETERMINING THE EDGE EFFECT OF STRIP THINNED BOTTOMLAND HARDWOOD STANDS** Seth Glaze and Jamie Schuler University of Arkansas at Monticello
- 15 B** **DO GLYCOCONJUGATES CONTRIBUTE TO EXTRA- OR INTRACELLULAR INHIBITION OF *BACILLUS CEREUS* SPORES** Michaelle Park<sup>1</sup>, Lee Soderberg, Ph.D.<sup>2</sup>, and Olga Tarasenko, M.D., Ph.D.<sup>1</sup> <sup>1</sup>Department of Biology, University of Arkansas at Little Rock, Little Rock, AR <sup>2</sup>Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR.
- 16 B** **TEMPORAL PATTERNS OF DEVELOPMENT IN SOUTHERN BROOK LAMPREY (*ICHTHYOMYZON GAGEI*) IN CADRON CREEK, ARKANSAS.** Sarah Pavan, Ginny Adams, and Reid Adams University of Central Arkansas, Department of Biology, LSC180 Conway, Arkansas 72035