

2002

## 86th Annual Meeting, 2002. Program

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## Arkansas Academy of Science

**PROGRAM**  
**Arkansas Academy of Science**  
**86th Annual Meeting**  
**April 5-6, 2001**  
**University of Arkansas at Little Rock**

## SCHEDULE OF EVENTS

Friday, April 5, 2002

9:00 a.m. - 3:00 p.m.	Registration	ETAS Lobby	6:30 p.m. - 8:00 p.m.	Banquet	DSC Meeting Rooms A & B
8:30 a.m. - 10:30 a.m.	Executive Committee Meeting	ETAS 125L			
11:00 a.m. - 12:00 p.m.	First Business Meeting	ETAS 233	8:00 p.m. - 9:00 p.m.	Keynote Address: J. Alan Pounds <i>Global Warming and the Future of Biodiversity: Lessons from a Tropical Cloud Forest</i>	Dickenson Hall Auditorium
	Oral Presentations				
1:30 p.m. - 3:30 p.m.	Microbiology, Parasitology	ETAS 233			
1:15 p.m. - 2:30 p.m.	Geology, Science Education	ETAS 379			
3:00 p.m. - 4:00 p.m.	Aquatic Ecology	ETAS 379			
1:30 p.m. - 2:30 p.m.	Atmospheric Chemistry	ETAS 279			
2:45 p.m. - 4:45 p.m.	Chemistry	ETAS 229			
1:15 p.m. - 2:15 p.m.	Mathematics	ETAS 354			
2:45 p.m. - 4:15 p.m.	Physics	ETAS 354			
2:00 p.m. - 4:00 p.m.	Poster Presentations	ETAS Foyer & Earthquake Ctr			
4:30 p.m. - 5:00 p.m.	Science Education Committee Meeting	ETAS 233			
5:30 p.m. - 6:30 p.m.	Reception / Social Mixer	DSC 2nd Floor Concourse			

Saturday, April 6, 2002

	Oral Presentations				
8:00 a.m. - 10:30 a.m.	Invertebrate Zoology	ETAS 233			
8:00 a.m. - 10:45 a.m.	Terrestrial Ecology	ETAS 354			
8:00 a.m. - 10:30 a.m.	Vertebrate Zoology	ETAS 262			
8:00 a.m. - 10:30 a.m.	Botany & Plant Biology	ETAS 379			
8:00 a.m. - 10:30 a.m.	Inorganic Materials	ETAS 229			
8:00 a.m. - 10:45 a.m.	Engineering	ETAS 327			
11:00 a.m.	Second Business Meeting	Fribourgh Hall 101			

## SECTION PROGRAMS

\* Undergraduate \*\*Graduate

## ORAL PRESENTATIONS

Friday, April 5, 2002  
**Microbiology, Parasitology**  
 Location: Room 233

Time	Topic	
1:30	<u>Chris T. McAllister</u> , Charles R. Bursey and Stanley E. Trauth, Department of Biology, Texas A&M University-Texarkana, Texarkana, TX 75505. Department of Biology, Pennsylvania State University - Shenango Campus, Sharon, PA 16146; and Department of Biological Sciences, Arkansas State University, State University, AR 72467. <b>PARASITES OF ENDEMIC PLETHODON SPP. (AMPHIBIA: CAUDATA) FROM ARKANSAS AND OKLAHOMA</b>	2:15
1:45	<u>Rachel Trana</u> and Russell Nordeen, University of Arkansas at Monticello, School of Mathematical and Natural Sciences, P.O. Box 3480, Monticello, AR 71656. <b>TRANSPOSON MUTAGENESIS OF IGEPON METABOLIZING BACTERIA</b>	2:30
2:00	<u>Malcolm L. McCallum</u> <sup>1</sup> , Benjamin A. Wheeler <sup>1</sup> , and Stanley E. Trauth <sup>2</sup> , (1) Environmental Sciences Ph.D. Program, Arkansas State University, P.O. Box 847, State University, AR 72467; (2) Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, AR 72467. <b>SEVERE LEECH INFESTATION OF AN OZARK AMPHIBIAN COMMUNITY</b>	2:45
		2:15
		2:30
		2:45
		BREAK
		2:45
		<u>Nelly P. Norrell</u> , Fumiyo Kubo, G. Cory Morgan, Shane Melton, Dana K. Strassle, and Dr. Steven W. Runge, Department of Biology, University of Central Arkansas, Conway, Arkansas 72035. <b>THE ROLE OF INTRACELLULAR ACIDIFICATION IN APOPTOTIC PROGRESSION</b>

## Secretary's Report

- 3:00 Gregory K. Eads, Arkansas Post National Memorial, Gillett, AR 72055; Philip A. Tappe and Lynne C. Thompson, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. **OCCURRENCE OF TICK-BORNE DISEASE AT ARKANSAS POST NATIONAL MEMORIAL**
- 3:15 Brad Byrne and Wayne L. Gray, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR 72205. **CHARACTERIZATION OF THE SIMIAN VARICELLA VIRUS GLYCOPROTEIN C**
- Friday, April 5, 2002  
**Geology & Science Education**  
Location: Room 379
- 3:00 Tobin Fulmer and Renn Tumilson, Department of Biology, Henderson State University, Arkadelphia, AR 71999. **HAZARDS OF LOST FISHING GEAR TO WILDLIFE ON LAKES**
- 3:15 Malcolm L. McCallum<sup>1</sup>, and Stanley E. Trauth, (1) Environmental Sciences Ph.D. Program, Arkansas State University, P.O. Box 847, State University, AR 72467; (2) Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, AR 72467. **A FORTY-THREE YEAR MUSEUM STUDY OF NORTHERN CRICKET FROG (*ACRIS CREPITANS*) ABNORMALITIES IN ARKANSAS: UPWARD TRENDS AND DISTRIBUTIONS**
- 3:30 Benjamin A. Wheeler and Stanley E. Trauth, Environmental Sciences Ph.D. Program, Arkansas State University, P.O. Box 847, State University, AR 72467-0847; Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, AR 72467-0599. **ABNORMALITIES IN THE OZARK HELLBENDER, *CRYPTOBRANCHUS ALLEGANIENSIS BISHOPI***
- 3:45 James Daly, Bruce DeYoung, and Terry Hostetler, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR 72205. **INFESTATION OF CROOKED CREEK SMALL-MOUTH WITH YELLOW GRUB (*CLINOSTOMUM MARGINATUM*)**
- Friday, April 5, 2002  
**Atmospheric Chemistry**  
Location: Room 229
- 1:15 D.W.G. Sears, P. H. Benoit, A. Kracher, and M. Kareev. **SIMULATION STUDIES OF THE FORMATION OF ASTEROIDS, AND THE EVOLUTION OF THE SURFACE OF MARS**
- 1:30 Autumn R. Fernald, Stephen A. Leslie, and Jeffrey B. Connelly, University of Arkansas at Little Rock, Department of Earth Sciences, Little Rock, AR 72204. ***CARYOCARIS CURVILATA* (ARTHROPODA, PHYLLOCARIDA) FROM THE MAZARN SHALE, OUACHITA MOUNTAINS, PARON, ARKANSAS**
- 1:45 Alois J. Adams and Deborah L. Herden, Department of Physics and Astronomy, University of Arkansas at Little Rock, 2801 S. University Ave., Little Rock, Arkansas 72204. **PORTABLE PHYSICS MODULES IN STANDARDS-BASED INSTRUCTION**
- 2:00 Deborah L. Herden and Alois J. Adams and Department of Physics and Astronomy, University of Arkansas at Little Rock, 2801 S. University Ave., Little Rock, Arkansas 72204. **THE ARKANSAS PHYSICS LENDING LIBRARY**
- 2:15 David Jamieson, Arkansas State University-Newport, Department of Biological Sciences, 7648 Victory Boulevard, Newport, Arkansas 72112. **TEACHING DARWIN'S THEORY OF EVOLUTION AT THE TWO-YEAR COLLEGE**
- Friday, April 5, 2002  
**Aquatic Ecology & Ecotoxicology**  
Location: Room 379
- 2:45 Lesley White, Jennifer Faulkner, Dr. Mike Panigot, Department of Chemistry, Arkansas State University - Jonesboro, P.O. Box 419, State University, AR 72467-0419; Dr. Robert W. Curley, Jr., Division of Medicinal Chemistry, College of Pharmacy, The Ohio State University, 500 W. 12th Ave., Columbus, OH 43210-1291. **EFFORTS TOWARD THE PREPARATION OF STEREOSELECTIVELY BETA-DEUTERATED HISTIDINE**
- 3:00 Amanda Caldwell, Jason Boggs, Robin Carlton, and Dr. Mike Panigot, Department of Chemistry, Arkansas State University - Jonesboro, P.O. Box 419, State University, AR 72467-0419. **STUDIES IN THE SYNTHESIS OF C-GLYCOSIDE DENDRIMERS - DIFFICULTIES AND SOLUTIONS**
- 3:15 Cecil A. Sorrells<sup>1</sup>, Ali U. Shaikh<sup>2</sup>, and V. M. Samokyszyn<sup>3</sup>; 1, 2 - Department of Chemistry, University of Arkansas at Little Rock, Little Rock, AR 72204; 3 - Division of Toxicology, University of Arkansas for Medical Sciences, Little Rock. **OXIDATION-REDUCTION CHARACTERISTICS OF CHLOROPHENOLS**
- 3:30 Anwar A. Bhuiyan<sup>1</sup> and Harry O. Brotherton<sup>2</sup>, <sup>1</sup>Department of Physical Science, Arkansas Tech University, Russellville, AR 72801; <sup>2</sup>Chemistry Department, University of Louisiana at Monroe, Monroe, LA 71209. **SOLID PHASE EXTRAC-**

## Arkansas Academy of Science

## TION OF PESTICIDES WITH DETERMINATION BY GAS CHROMATOGRAPHY

- 3:45 Doug Cutsinger, Harding University, 104 S. Moss St., Apt. 5, Searcy, AR 72143. **COCAINE CONTAMINATION OF MONEY**
- 4:00 Derek Selvidge, Harding University, HU Box 10652, Searcy, AR 72149. **LUMINOL IS COMPLICATED**
- 4:15 Justin Dyniewski, Harding University, HU Box 12369, Searcy, AR 72149. **CHEMISTRY OF LUMINOL**
- 4:30 Rhonda Gregory and Tommy Nix, Harding University, HU Box 11948, Searcy, AR 72149. **A DIFFERENTIAL CALORIMETRIC STUDY OF LYSOZYME**

Friday, April 5, 2002

Mathematics

Location: Room 354

- | Time | Topic  |
|------|--|
| 1:15 | Fred Hickling and Danny Arrigo, University of Central Arkansas, UCA Math Department, Conway, Arkansas 72035. <b>BOUNDARY VALUE PROBLEMS AND THE DARBOUX TRANSFORMATION</b>         |
| 1:30 | Brandon Lindley, University of Central Arkansas, Conway, AR 72035. <b>TIME INDEPENDENT SCHRODINGER POTENTIALS</b>  |
| 1:45 | Garth Johnson and Bryan Gipson, University of Central Arkansas, UCA Math Department, Conway, Arkansas 72035. <b>THE DARBOUX TRANSFORMATION OF THE VARIABLE WAVE SPEED EQUATION</b> |
| 2:00 | Chad Fendt, University of Central Arkansas, UCA Math Department, Conway, AR 72035. <b>SCHRODINGER'S EQUATION AND POTENTIALS USED TO MODEL <math>\alpha</math>-DECAY</b>            |

Friday, April 5, 2002

Physics

Location: Room 354

- | Time | Topic   |
|------|---|
| 2:45 | Reason Cook and Mostafa Hemmati, Department of Physical Science, Arkansas Tech University, Russellville, AR 72801. <b>POTENTIAL WAVES</b>   |
| 3:00 | A. Bhattacharyya <sup>1</sup> , J. H. Masliyah <sup>2</sup> and J. Yang <sup>3</sup> ; <sup>1</sup> Department of Applied Science, University of Arkansas at Little Rock, 2801 South University, ETAS 575, Little Rock, AR 72204-1099, <sup>2</sup> Department of Chemical and Materials Engineering, <sup>3</sup> Department of Mechanical Engineering, University of Alberta, Edmonton, Alberta T6G 2G8, Canada. <b>A MODEL OF OSCILLATORY LAMINAR ELECTRO-KINETIC FLOW IN LONG, CIRCULAR</b> |
| 3:15 | Bao-An Li, Department of Chemistry and Physics, P.O. Box 419, Arkansas State University, Arkansas 72467. <b>HIGH DENSITY BEHAVIOUR OF NUCLEAR SYMMETRY ENERGY AND HIGH ENERGY HEAVY-ION COLLISIONS</b>  |
| 3:30 | Bao-An Li, A. T. Sustich, M.A. Tilley and Bin Zhang, Department of Chemistry and Physics, P.O. Box 419, Arkansas State University, Arkansas 72467. <b>PROBING THE ISOSPIN-DEPENDENCE OF MECHANICAL AND</b>  |

## CHEMICAL INSTABILITIES IN NEUTRON-RICH MATTER

- 3:45 Bin Zhang<sup>1</sup>, C. M. Ko<sup>2</sup>, Bao-An Li<sup>1</sup>, Zi-Wei Lin<sup>2</sup>, Subrata Pal<sup>2</sup>, <sup>1</sup>Department of Chemistry and Physics, Arkansas State University, P.O. Box 419, State University, Arkansas 72467; <sup>2</sup>Cyclotron Institute and Department of Physics, Texas A&M University, Mail Stop 3366, College Station, Texas 77843. **DYNAMICAL J/ $\psi$  PRODUCTION IN RELATIVISTIC NUCLEAR COLLISIONS**
- 4:00 B. J. Bailey, Harding University, HU Box 12364, Searcy, AR 72149. **THE QUANTUM MECHANICS OF THE ABSORPTION SPECTROSCOPY OF RUBIDIUM ISOTOPES USING INFRARED RADIATION FROM A DIODE LASER**

## POSTER PRESENTATIONS

Friday, April 5, 2002

Location: ETAS Foyer and Earthquake Center

- | Time | Topic  |
|------|--|
|      | Sullivan, R. A. and Boss, S. K., Dept. of Geosciences, U. of Arkansas, Fayetteville, AR 72701. <b>REVISED GEOLOGY OF WAR EAGLE QUADRANGLE, BENTON COUNTY, ARKANSAS</b>   |
|      | King, J. T., King, M. E., and Boss, S. K., Dept. of Geosciences, U. of Arkansas, Fayetteville, AR 72701. <b>BEDROCK GEOLOGY OF WEST FORK QUADRANGLE, WASHINGTON COUNTY, ARKANSAS</b>   |
|      | Hale, C. R. and Connelly, J. B., Department of Earth Sciences, University of Arkansas at Little Rock, 2801 South University Avenue, Little Rock, AR 72204-1099. <b>CLEAVAGE DEVELOPMENT WITHIN A FOLDED SEQUENCE OF JACKFORK SANDSTONE, EASTERN OUACHITA MOUNTAINS, ARKANSAS</b>   |
|      | Xiaomin Tu <sup>1</sup> , Elizabeth Geesaman <sup>1</sup> , Kun Wang <sup>3</sup> , J. Thor Arnason <sup>2</sup> , Cesar M. Compadre <sup>1,3</sup> , Jerry A. Darsey <sup>1,3</sup> , <sup>1</sup> Department of Chemistry, University of Arkansas at Little Rock, Little Rock, AR 72204; <sup>2</sup> Biology Department, University of Ottawa, Ottawa, Ontario, Canada K1N6N5; <sup>3</sup> Biomedical Visulation Center, University of Arkansas for Medical Sciences, Little Rock, AR 72205. <b>STRUCTURE ACTIVITY RELATIONSHIP ANALYSIS USING AB INITIO CALCULATIONS AND ARTIFICIAL NEURAL NETWORKS</b> |
|      | Constance Meadors and A. B. Wright, Department of Applied Science, University of Arkansas at Little Rock, Little Rock, AR 72204. <b>DESIGN OF A MICROVALVE FOR A MICROPROPULSION SPACECRAFT</b>  |
|      | Michele L. Renschin <sup>1</sup> , Lynne C. Thompson <sup>1</sup> , and Michael G. Shelton <sup>2</sup> , <sup>1</sup> School of Forest Resources, University of Arkansas at Monticello, Monticello, AR 71656-3469; <sup>2</sup> Southern Research Station, USDA Forest Service, Monticello, AR 71656-3515. <b>SPRINGTALS (INSECTA: COLLEMBOLA) IN BURNED AND UNBURNED LOBLOLLY PINE STANDS</b>  |
|      | Shelly Elizondo, Department of Microelectronics-Photonics and Hameed A. Naseem, Department of Electrical Engineering, Arkansas Photovoltaic Research Center, University of Arkansas, Fayetteville 72701. <b>STUDY OF ALUMINUM-INDUCED CRYSTALLIZATION OF</b>   |

## Secretary's Report

**AMORPHOUS SILICON USING OPTICAL AND ELECTRON MICROSCOPY**

John E. Urbanic and Thomas E. Nupp, Biology Department, Arkansas Tech University, Russellville, AR 72801. **POPULATION STATUS OF INTERIOR LEAST TERNS OF THE ARKANSAS RIVER, ARKANSAS**

Casey Milford and Brandon Willis, University of Central Arkansas, UCA Math Department, Conway, Arkansas 72035. **EXACT SOLUTIONS TO APPROXIMATE EQUATIONS**

Mary E. Kinnear and Stephn C. Grace, Department of Biology, University of Little Rock, Little Rock, AR 72204. **EFFECTS OF LIGHT INTENSITY ON PHENOLIC ANTIOXIDANT PRODUCTION IN TOMATO**

Mary E. Kinnear and Stephn C. Grace, Department of Biology, University of Little Rock, Little Rock, AR 72204. **SEASONAL CHANGES IN POLYPHENOLS IN *ECHINACEA ANGUSTIFOLIA***

Jasa Holt, Arkansas State University, Dept. of Biological Sciences, Jonesboro, AR 72467. **TRILLIUM VIRIDE IN THE STATE OF ARKANSAS**

Matthew D. Lewis, Chris Kellner, Biology Department, Arkansas Tech University, Russellville, AR 72801; Steven Folwer, James C. Bednarz, Department of Biological Sciences, Arkansas State University, State University, AR 72467. **SURVIVAL AND HABITAT USE OF PEN-REARED NORTHERN BOBWHITE AT CAMP ROBINSON WILDLIFE DEMONSTRATION AREA, ARKANSAS**

John B. Czarnecki, Gregory P. Stanton, and David A. Freiwald, U.S. Geological Survey, 401 Hardin Rd., Little Rock, AR 72211. **HYDROGEOLOGY AND PHYSICAL CHARACTERISTICS OF WATER SAMPLES AT THE RED RIVER ALUMINUM SITE, STAMPS, ARKANSAS**

Wendi J. W. Williams, Earth Science, University of Arkansas at Little Rock, 2801 S. University Ave., Little Rock, AR 72204. **QUATERNARY MAAR VOLCANISM IN THE SOUTHERN RIO GRANDE RIFT, NEW MEXICO**

Felton, William Joseph and Owens, Don R., Department of Earth Sciences, and Al-Shukri, Haydar, Department of Applied Science, University of Arkansas at Little Rock, Arkansas 72204-1099. **MAGNETIC SURVEY OF THE OPELLO BRECCIA**

Susan E. Baker, Rose McConnell, and Walter Godwin, School of Mathematical and Natural Sciences, University of Arkansas at Monticello, Monticello, AR 71656. **CO-POLYMERS OF FURAN WITH PYRROLE OR THIOPHENE: A SYNTHETIC STUDY**

Amy Stefan, Crystal Newton, Nikki Herring, Rose McConnell, and Walter Godwin, School of Mathematical and Natural Sciences, University of Arkansas at Monticello, Monticello, AR 71656. **PREPARATION OF NEW CATHESPIN D INHIBITORS**

E. C. Gordon, T. C. Keisling, L. R. Oliver, and T. A. Castillo, Northeast Research and Extension Center, Keiser, AR 72351; University of Arkansas, Fayetteville, AR 72701, and RiceTec, Jonesboro, AR 72467. **EFFECT OF TILLAGE AND HERBICIDE TREATMENTS ON REDVINE (*BRUNNICHIA OVATA*) SUBTERRANEAN MORPHOLOGY**

Beatrice Kiranga, Chris M. Harrison, Lize Wilcox, Malay K. Mazumder, and David A. Lindquist. **THE REACTION PRODUCTS OF DIETHYLALUMINUM AMIDE WITH ACETONE AND SUBSEQUENT HYDROLYSIS TO FORM ALUMINA**

David W. Clark and Robert S. Sikes, Department of Biology, University of Arkansas at Little Rock, Little Rock, AR 72204. **FORAGING ACTIVITY AND ENERGY PROCUREMENT UNDER THE THREAT OF PREDATION**

Steffany C. White<sup>1</sup>, Carrie D. Day<sup>1</sup>, David W. Clark<sup>2</sup>, and Robert S. Sikes<sup>2</sup>, <sup>1</sup>Little Rock Zoo, 1 Jonesboro Dr., Little Rock, AR 72205; <sup>2</sup>Department of Biology, University of Arkansas at Little Rock, Little Rock, AR 72204. **CHANGES IN ASSIMILATION EFFICIENCIES AS A FUNCTION OF DIET IN CAPTIVE OTTERS**

Rajesh Sharma, David Caldwell, David A. Lindquist, Malay K. Mazumder, Department of Applied Science and Department of Chemistry, University of Arkansas at Little Rock, Little Rock, AR 72204. **HIGH TEMPERATURE OXYGEN ION TRANSPORT USING PEROVSKITE-PHASE CERAMICS MEMBRANES**

Greg Giuffria and K. C. Larson, Department of Biology, University of Central Arkansas, Conway, AR 72035. **A COMPARISON OF FISH COMMUNITIES BETWEEN THE BUFFALO NATIONAL RIVER AND CROOKED CREEK USING AN INDEX OF BIOTIC INTEGRITY**

Lee A. Elizondo, Department of Microelectronics-Photonics, University of Arkansas, Fayetteville, 72701; Hameed Naseem, Department of Electrical Engineering, University of Arkansas, Fayetteville, 72701. **THE ROLE OF HYDROGEN IN ALUMINUM INDUCED CRYSTALLIZATION OF HYDROGENATED AMORPHOUS SILICON**

**ORAL PRESENTATIONS**

Saturday, April 6, 2002  
Invertebrate Zoology  
Location: Room 233

Time	Topic
8:00	<u>Michael D. Warriner</u> , Arkansas Natural Heritage Commission, 1500 Tower Building, 323 Center Street, Little Rock, AR 72201; T. Evan Nebeker and Steven A. Tucker, Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS 39762. <b>INSECT DIVERSITY IN AN EASTERN COTTONWOOD (<i>POPULUS DELTOIDES</i>) PLANTATION AND ADJACENT BOTTOMLAND HARDWOOD FOREST IN SOUTHEASTERN ARKANSAS</b>
8:15	<u>Chris T. McAllister</u> , Rowland M. Shelley, and James T. McAllister, III, Department of Biology, Texas A&M University-Texarkana, Texarkana, TX 75505; Research Laboratory, North Carolina State Museum of Natural Sciences, Raleigh, NC 27607; and W. T. White High School, 1244 Forest Lane, Dallas, TX 75228. <b>SOME MILLIPEDS (ARTHROPODA: DIPLOPODA) OF WESTERN AND CENTRAL ARKANSAS AND SOUTHEASTERN OKLAHOMA</b>
8:30	<u>David R. Lyon</u> and Matthew D. Moran, Department of Biology, Hendrix College, Conway, AR 72032. <b>PATTERNS OF ARTHROPODS IN HABITING EPIPHYTES IN A</b>

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## TEMPERATE DECIDUOUS FOREST

- 8:45 George L. Harp, Dept. of Biological Sci., Arkansas State Univ., State University, AR 72467. **NEW DRAGONFLY RECORDS FOR NICARAGUA**
- 9:00 Chris S. Harris, Chris T. McAllister, Rowland M. Shelley, and James T. McAllister, III, Department of Biology, Texas A&M University-Texarkana, Texarkana, TX 75505; Research Laboratory, North Carolina State Museum of Natural Sciences, Raleigh, NC 27607; and W. T. High School, 1244 Forest Lane, Dallas, TX 75228. **MILLIPEDS (ARTHROPODA: DIPLOPODA) OF SEVEN COUNTIES OF THE WEST GULF COASTAL PLAIN OF ARKANSAS**
- 9:15 Gerald E. Walsh, 9 Yocum Road, Rogers, AR 72756; Brian F. Coles, 4202 Scottie Smith Drive, Jefferson, AR 72079. **POLYGYRID LAND SNAILS (GASTROPODA, POLYGYRIDA) OF ARKANSAS**
- 9:30 Gregory K. Eads, Arkansas Post National Memorial, Gillett, AR 72055; Philip A. Tappe and Lynne C. Thompson, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. **TICK SEASONALITY AND ABUNDANCE AT ARKANSAS POST NATIONAL MEMORIAL**
- 9:45 Alexander J. D., Murray J. A., Department of Biology, University of Central Arkansas, Conway, AR 72035. **MECHANISMS OF TURNING WHILE CRAWLING IN THE MARINE SLUG TRITONIA DIOMEDEA**
- 10:00 Redondo R., Murray J. A., Department of Biology, University of Central Arkansas, Conway, AR 72035. **ROLE OF A SINGLE NEURON IN TURNING WHILE CRAWLING IN THE MARINE SLUG TRITONIA DIOMEDEA**
- 10:15 Larry R. Hilburn and Lynita M. Cooksey, Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, AR 72467. **GENETIC VARIABILITY IN ANOPHELES QUADRIMACULATUS SAY POPULATIONS FROM EASTERN ARKANSAS**
- Terrestrial Ecology**  
Location: Room 354
- Time**      **Topic**
- 8:00 Jeremy L. Jackson, Shane Prescott, and J. D. Wilhide, Department of Biological Sciences, Arkansas State University, Jonesboro, AR 72401. **PRELIMINARY EFFECTS OF WILDLIFE STAND IMPROVEMENTS AND LOW INTENSITY PRESCRIBED BURNS ON BAT POPULATIONS ON THE BUFFALO RANGER DISTRICT, OZARK NATIONAL FOREST, AR**
- 8:15 James R. Samples, J. D. Wilhide, and Roger Buchanan, Arkansas State University, Department of Biological Sciences, Jonesboro, AR 72467. **PRELIMINARY BAT SURVEY OF FORT CHAFFEE MTC**
- 8:30 Pradeepa Rangarajan<sup>1</sup>, Ali U. Shaikh<sup>2</sup>, Gary A. Heidt<sup>3</sup>, and David Clark<sup>4</sup>, <sup>1,2</sup>Department of Chemistry, <sup>3,4</sup>Department of Biology, University of Arkansas at Little Rock, Little Rock, AR 72204. **DETERMINATION OF BILE ACIDE PROFILES IN SCAT SAMPLES OF WILD ANIMALS BY GAS CHROMATOGRAPHY - MASS SPECTROMETRY**
- 8:45 Matthew J. Butler and Phillip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. **UNDERSTORY HABITAT CHARACTERISTICS OF INDUSTRIAL FOREST STANDS USED BY FORAGING RED-COCKADED WOODPECKERS IN SOUTHERN ARKANSAS AND NORTHERN LOUISIANA**
- 9:00 Matthew J. Butler and Phillip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. **ESTIMATION OF HABITAT AVAILABILITY FOR HABITAT SELECTION ANALYSIS**
- 9:15 Christopher L. Watt and Phillip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. **SHORT-TERM UNDERSTORY VEGETATION RESPONSES TO DEER ENCLOSURES AT ARKANSAS POST NATIONAL MEMORIAL**
- 9:30 Matthew D. Moran, Department of Biology, Hendrix College, Conway, AR 72032. **THE ROLE OF AMERICAN BISON (BOS BISON) IN STRUCTURING ARTHROPOD COMMUNITIES IN TALLGRASS PRAIRIE**
- 9:45 Robert E. Swearingen, Margo A. Blaha, Alison G. Boyer, and Matthew D. Moran, Department of Biology, Hendrix College, Conway, AR 72032. **INTERACTION OF NUTRIENTS AND PREDATORS IN AN ARKANSAS GRASSLAND**
- 10:00 Jennie S. Popp, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701; Terry W. Griffin, University of Illinois, Macomb Extension Center; Dr. Bill Baker, Arkansas State University, Jonesboro, AR; Michael Popp, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701. **PROFITABILITY OF VARIABLE RATE PHOSPHORUS IN A TWO CROP ROTATION**
- 10:15 Britteny Cioni, Colorado State University, Department of Agricultural and Resource Economics, Fort Collins, Colorado 80521, Jennie S. Popp, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701; Martin Redfern, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701; Wayne Miller, University of Arkansas, Cooperative Extension Service, Little Rock; Michael Popp, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701. **ASSESSING THE IMPACTS OF ENVIRONMENTAL REGULATIONS ON CONFINED ANIMAL FEEDING OPERATIONS**
- 10:30 Paul Doruska, Travis Posey, and Richard Leveritt, Assistant Professor of Forest Biometrics, graduate student, and undergraduate student, respectively, Arkansas Forest Resources Center, School of Forest Resources, University of Arkansas, P.O. Box 3468, Monticello, AR 71656. **USE OF MINIATURE PLANTATIONS TO EXAMINE ACCELERATED STAND DEVELOPMENT IN LOBLOLLY PINE PLANTATIONS: FIRST YEAR RESULTS**
- Vertebrate Zoology**  
Location: Room 262
- Time**      **Topic**
- 8:00 Stanley E. Trauth<sup>1</sup>, John C. Harshbarger<sup>2</sup>, and Patrick Daniel<sup>1</sup>, <sup>1</sup>Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, Arkansas 72467-0599; <sup>2</sup>Registry of Tumors in Lower Animals, Department of Pathology, Ross 520, George Washington University Medical

## Secretary's Report

		<b>Botany &amp; Plant Biology</b> Location: Room 379	
		<u>Time</u>	<u>Topic</u>
	Center, 2300 I Street, N.W., Washington, D.C. 20037. <b>EPI- DERMAL PAPILLOMA IN AN OZARK HELLEN- BENDER (<i>CRYPTOBRANCHUS ALLEGANIENSIS BISHOP</i>) FROM THE SPRING RIVER OF NORTHERN ARKANSAS</b>	8:00	Staci Thomas, Texas A&M, Texarkana, 2600 N. Robison Rd., Texarkana, TX 75501. <b>PURIFICATION OF POKEWEED ANTIVIRAL PROTEIN COMPLEX</b>
8:15	<u>Renn Tumilson</u> , Tommy Finley, Tobin Fulmer, and David Saughey. Department of Biology, Henderson State University, Arkadelphia, AR 71999 and U.S. Forest Service, Jessieville, AR 71949. <b>BATS OF THE JESSIEVILLE RANGER DIS- TRICT, OUACHITA NATIONAL FOREST</b>	8:15	Don C. Bragg, USDA Forest Service, Southern Research Station, P.O. Box 3516 UAM, Monticello, AR 71656. <b>CHECKLIST OF MAJOR PLANT SPECIES IN ASHLEY COUNTY, ARKANSAS NOTED BY GENERAL LAND OFFICE SURVEYORS</b>
8:30	<u>Kelly S. Richey</u> , David W. Allard and Chris T. McAllister, Department of Biology, Texas A&M University-Texarkana, Texarkana, TX 75505. <b>A PRELIMINARY STUDY ON DISTRIBUTION OF FROGS AND TOADS (AMPHIB- IA: ANURA) IN THE ARK-LA-TEX</b>	8:30	<u>Jason A. Haley</u> , Henderson State University, 1100 Henderson St., Arkadelphia, AR 71923; and Daniel L. Marsh, Greenwood, AR 72936. <b>A DISTINCTIVE LEAFY LIVER- WORT IN THE ARKANSAS OUACHITAS</b>
8:45	Amanda C. Crnkovic; Museum of Life Sciences, Louisiana State University in Shreveport, One University Place, Shreveport, LA 71115-2399. <b>THE DISCOVERY OF THE NORTHERN LONG-EARED MYOTIS, <i>MYOTIS SEPTENTRIONALIS</i> (CHIROPTERA: VESPERTIL- IONIDAE), IN LOUISIANA</b>	8:45	<u>Phillip A. Tappe</u> and Christopher L. Watt, School of Forest Resources and Arkansas Forest Resources Center, Univeristy of Arkansas, Monticello, AR 71656; Gregory K. Eads, Arkansas Post National Memorial, Gillett, AR 72055. <b>A VEGETATION INVENTORY OF ARKANSAS POST NATIONAL MEMORIAL</b>
9:00	Malcolm L. McCallum <sup>1</sup> , <u>Robert G. Neal</u> <sup>2</sup> , (vneal@cox- internet.com), and Stanley E. Trauth <sup>2</sup> (strauth@astate.edu), <sup>1</sup> Environmental Sciences Ph.D. Program, Arkansas State University, P.O. Box 847, State University, AR 72467, <sup>2</sup> Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, AR 72467. <b>TAIL- COILING IN RINGNECK SNAKES: FLASH DISPLAY OR DECOY?</b>	9:00	George P. Johnson, Biological Sciences, Arkansas Tech University, Russellville, AR 72801. <b>ARKANSAS' OR- CHIDS: FREQUENCY AND DISTRIBUTION</b>
9:15	<u>Mark F. Roth</u> and Philip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. <b>CHARACTERISTICS OF AMERICAN ALLIGATOR HABITAT AT ARKANSAS POST NATIONAL MEMORIAL</b>	9:15	Katherine C. Larson, Department of Biology, University of Central Arkansas, Conway, AR 72035, klarson@mail.uca.edu. <b>CONTRASTING MOBILITY OF NATIVE AND EXOTIC HONEYSUCKLE VINES IN ARKANSAS</b>
9:30	<u>Christopher L. Watt</u> , Mark F. Roth, and Philip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. <b>AMERICAN ALLIGATOR DISTRIBUTION IN ARKANSAS</b>	9:30	Alison Boyer, Department of Biology, Hendrix College, Conway, AR 72032. <b>THE ABILITY OF SOIL FUNGI TO DEGRADE GLYPHOSATE (ROUNDUP®)</b>
9:45	<u>Mark F. Roth</u> and Philip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. <b>AMERICAN ALLIGA- TOR SEASONAL AND ANNUAL HOME RANGE ESTIMATES AT ARKANSAS POST</b>	9:45	<u>Jessie K. Fly</u> and Joyce M. Hardin, Hendrix College, 1600 Washington Avenue, Conway, Arkansas 72032. <b>THE EFFECTS OF TREE SPECIES AND TREE AGE ON EPIPHYTE COMMUNITY STRUCTURE IN A TEMPERATE DECIDUOUS FOREST</b>
10:00	<u>Matthew J. Butler</u> and Philip A. Tappe, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. <b>RED-COCKADED WOODPECKER FORAGING HABITAT REQUIRE- MENTS ON INDUSTRIAL FORESTS IN SOUTHERN ARKANSAS AND NORTHERN LOUISIANA</b>	10:00	Donald E. Culwell, Department of Biology, University of Central Arkansas, Conway, AR 72035. <b>PILLWORT, AN ELUSIVE, BUT THRIVING, GRAMINOID FERN</b>
10:15	<u>Kendall R. Moles</u> , Charles J. Gagen, Fisheries and Wildlife Biology Program, Arkansas Tech University, McEver Hall, Russellville, AR 72801; Lisa J. Hlass and Richard W. Standage, U.S.D.A. Forest Service, Ouachita National Forst, Hot Springs, AR 71902. <b>HABITAT AND ABUNDANCE OF THE OUACHITA FORM OF THE LONGNOSE DARTER (<i>PERCINA NASUTA</i>)</b>	10:15	Michael P. Popp, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701; <u>Terry C. Keisling</u> , University of Arkansas HC 69, Box 51, Rover, AR 72860; Lanny O. Ashlock, University of Arkansas, 2301 S. University Ave., P.O. Box 391, Little Rock, AR 72203; Larry C. Purcell, University of Arkansas, 276 Alzheimer Drive, Fayetteville, AR 72701; Paul A. Counce, University of Arkansas, RREC, 2900 Hwy. 130E, Stuttgart, AR, 72160; David C. Annis Jr., Noble Foundatio, Oklahoma; Patrick M. Manning, University of Arkansas, Dept. of Ag. Econ. and Agribusiness, 217 Agriculture Building, Fayetteville, AR 72701; Eddie Gordon, University of Arkansas, NEREC, Keiser, AR 72351. <b>INNOVATIVE PRODUCTION METHODS ON WET CLAY SOILS FOR RICE AND SOYBEAN</b>

## Arkansas Academy of Science

## Inorganic Chemistry

Location: Room 229

Time	Topic
8:00	<u>Gustavo Rehder</u> , Dr. Robert Engelken, Randy Stidham, Richard Tanner, Lee Ketchum, and Anil Baral, Optoelectronic Materials Research Group, Department of Engineering/Environmental Sciences Program, Arkansas State University, P.O. Box 1740, State University (Jonesboro), AR 72467. <b>STABILITY AND OPTIMIZATION OF THE PHOTOCONDUCTIVITY IN THERMAL VACUUM EVAPORATED AND POWDER SPRAYED INDIUM (III) SULFIDE AND BISMUTH (III) SULFIDE THIN FILMS</b>
8:15	Stephen E. Hall, Lize Wilcox, William S. Tyree, Malay K. Mazumder, and David A. Lindquist. <b>POROUS ALUMINA BY THE REACTION OF DIETHYLALUMINUM AMIDE WITH BENZALDEHYDE FOLLOWED BY HYDROLYSIS</b>
8:30	<u>Anil Baral</u> , Dr. Robert Engelken, Richard Tanner, Randy Stidham, Lee Ketchum, and Gustavo Rehder, Environmental Sciences and Engineering Programs, Arkansas State University, P.O. Box 1740, State University, AR 72467. <b>ELECTRODEPOSITION OF CHROMIUM FROM MIXED AQUEOUS/ORGANIC CHROMIUM (III) BATHS</b>
8:45	Mohammad Saad Abbasi, H. A. Naseem, W. D. Brown Arkansas Photovoltaic Research Center, Department of Electrical Engineering, University of Arkansas, Fayetteville, AR 72701. <b>ALUMINUM INDUCED LATERAL CRYSTALLIZATION OF AMORPHOUS SILICON</b>
9:00	<u>Lee Ketchum</u> , Dr. Robert D. Engelken, Richard Tanner, Anil Baral, Gustavo Rehder, Randy Stidham, Barrett Brown, and Chad Chastain, Optoelectronic Materials Research Laboratory, Department of Engineering/Environmental Sciences Program, Arkansas State University, P.O. Box 1740, State University (Jonesboro), AR 72467. <b>CONTINUED RESEARCH IN ELECTROPLATING OF ENVIRONMENTALLY LOW HAZARD BUT DIFFICULT-TO-LATE METALS AND ALLOYS BY INDUCED CODEPOSITION FOLLOWED BY ANODIC STRIPPING OF EASIER-TO-PLATE METALS</b>
9:15	<u>Randy Stidham</u> , Dr. Robert Engelken, Gustavo Rehder, Richard Tanner, Lee Ketchum, and Anil Baral, Optoelectronic Materials Research Laboratory, Department of Engineering, Arkansas State University, P.O. Box 1740, State University (Jonesboro), AR 72467. <b>OPTIMIZING THERMAL VACUUM EVAPORATION OF THIN INDIUM SULFIDE FILMS FOR USE AS PHOTOCONDUCTIVE AN DPHTOVOLTAIC CELLS ON PRINTED CIRCUIT BOARD AND INDIUM TIN OXIDE-COATED GLASS SUBSTRATES</b>
9:30	<u>Marwan Barghouti</u> and Hameed Naseem, Dept. of Electrical Engineering, University of Arkansas, Fayetteville, AR 72701. <b>THE EFFECT OF THE NATIVE OXIDE LAYER ON METAL INDUCED CRYSTALLIZATION</b>
9:45	Maruf Hossain, Dr. Hameed A. Naseem, Dr. W. D. Brown, Dept. of Electrical Engineering, University of Arkansas, Fayetteville, AR 72701. <b>CHLORINE DOPED CADMIUM SULFIDE THIN FILMS FOR SOLAR CELL APPLICATION</b>
10:00	<u>Richard Tanner</u> , Dr. Robert Engelken, Chad Chastain, Barrett Brown, Gustavo Rehder, Randy Stidham, Lee Ketchum, and

Anil Baral, Optoelectronic Materials Research Laboratory, College of Engineering, Arkansas State University, P.O. Box 1740, State University (Jonesboro), AR 72467; and Dr. Malay Mazumder and Samiran De, Department of Applied Sciences, University of Arkansas - Little Rock, 2801 South University Ave., Little Rock, AR 72204. **LOW BOILING POINT SOLUTIONS OF METAL SALTS FOR LOW TEMPERATURE DEPOSITION OF MOLYBDENUM AND TUNGSTEN OXIDE FILMS BY SPRAY PYROLYSIS**

10:15 Steve Trigwell<sup>1</sup>, and Guna Selvaduray<sup>2</sup>, <sup>1</sup>Department of Applied Science, University of Arkansas at Little Rock, 2801 South University Avenue, Little Rock, AR 72204; <sup>2</sup>Department of Chemical and Materials Engineering, San Jose State University, 1 Washington Square, San Jose, CA 95192. **EFFECTS OF WELDING ELECTROPOLISHED 316L STAINLESS STEEL AS USED IN ULTRA-PURE FLUID DELIVERY SYSTEMS FOR THE SEMICONDUCTOR AND PHARMACEUTICAL INDUSTRIES**

## Engineering

Location: Room 327

Time	Topic
8:00	<u>Constance Meadors</u> and A. B. Wright, Department of Applied Science, University of Arkansas at Little Rock, Little Rock, AR 72204. <b>PRESSURE AND FLOW VALIDATION OF A SECOND GENERATION GAS EXTRACTION PROBE FOR A HYBRID ROCKET GAS EXTRACTION SYSTEM</b>
8:15	Robert A. Sims, Applied Science, UALR, 2801 S. University, Little Rock, AR 72204; <u>Steve R. Farmer</u> , GF Sloane, 7777 Sloane Drive, Little Rock, AR 72206. <b>MODELING OF ELECTROFUSION COILS FOR PERFORMANCE OPTIMIZATION</b>
8:30	Robert A. Sims and <u>Steve R. Farmer</u> , Applied Science, UALR, 2801 S. University, Little Rock, AR 72204. <b>SIMULATION OF VIDEO ELECTRIC SINGLE PARTICLE AERODYNAMIC RELAXATION TIME ANALYZERS</b>
8:45	<u>D. Saini</u> , C. U. Yurteri, N. Grable, R. A. Sims, and M. K. Mazumder, Department of Applied Science, University of Arkansas at Little Rock, 2801 S. University Avenue, Little Rock, Arkansas 72204. <b>EFFECT OF CHARGE ON THE DEPOSITION OF ELECTROSTATICALLY CHARGED RESPIRABLE AEROSOLS IN LUNG MODELS</b>
9:00	<u>Nick Grable</u> , D. Saini, P. Williams, M. Pritchett, M. K. Mazumder, R. A. Sims; UALR Applied Science Dept., 2801 S. University Ave., Little Rock, AR 72204. <b>ELECTROSTATIC EFFECTS ON THE DISPERSION OF FINE POWDERS</b>
9:15	R. Sharma, R. A. Sims, and M. K. Mazumder, Department of Applied Science, University of Arkansas at Little Rock, 2801 S. University Avenue, Little Rock, Arkansas 72204. <b>MODIFICATION OF SURFACE PROPERTIES OF POLYMERIC MATERIALS</b>
9:30	Mee-Lee Pritchett, M. K. Mazumder, C. Yurteri, and R. Sims, Department of Applied Science, University of Arkansas at Little Rock, 2801 S. University Avenue, Little Rock, Arkansas 72204. <b>AN ELECTROSTATIC DEPOSITION ENGINE FOR MAKIGN PHARMACEUTICAL TABLETS USING PURE DRUG POWDER</b>
9:45	<u>S. Trigwell</u> , A. S. Biris, and M. K. Mazumder, Department of Applied Science, University of Arkansas at Little Rock, 2801

Secretary's Report

S. University Avenue, Little Rock, Arkansas 72204. **TRIBOCHARGING OF JSC MARS-1 SIMULANT DUST**

10:00 A. S. Biris, C. U. Yurteri, M. K. Mazumder, R. A. Sims, P. H. Williams; University of Arkansas at Little Rock Applied Science Dept. ETAS 501, 2801 South University Ave., Little Rock, AR 72204. **REDUCTION OF DENDRITE FORMATIONS TO IMPROVE THE APPEARANCE OF THE POWDER CURED FILMS FOR AUTOMOTIVE INDUSTRY**

10:15 A. S. Biris, S. Trigwell, S. De, C. U. Yurteri, R. A. Sims, M. K. Mazumder, M. Pritchett; University of Arkansas at Little Rock Applied Science Dept. ETAS 501, 2801 South University Ave., Little Rock, AR 72204. **PARAMETRIC STUDY OF THE TRIBOCHARGING PROPERTIES OF POLYMER ACRYLIC POWDERS USED IN THE AUTOMOTIVE INDUSTRY**

10:30 S. De, M. Pritchett, A. Rego, M. K. Mazumder, C. U. Yurteri, and R. A. Sims, Department of Applied Science, University of Arkansas at Little Rock, 2801 S. University Avenue, Little Rock, Arkansas 72204. **ELECTROSTATIC MICROENCAPSULATION OF COMPOSITE PARTICULATE MATERIALS FOR MANUFACTURING AND ENVIRONMENTAL APPLICATIONS**