1998

82nd Annual Meeting, 1998. Program

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PROGRAM
Arkansas Academy of Science
82nd Annual Meeting
April 3-4, 1998
University of Arkansas for Medical Sciences

SCHEDULE OF EVENTS

Friday, April 3, 1998
11:00 am - 4:00 p.m. Registration EDII Bldg. G level
10:45 a.m. - 2:30 p.m. Shuttle transport from Hilton Hotel to meeting
8:30 am - 10:30 a.m. Executive Committee Meeting EDIII Bldg., Room G222
11:00 a.m. - 12:00 p.m. First Business Meeting EDII Bldg., Room G230
1:00 p.m. - 4:00 p.m. Paper Sessions EDII Bldg., G and B level
1:00 p.m. - 4:00 p.m. Poster Session EDII Concourse
1:00 p.m. - 4:00 p.m. Paper Sessions EDII Bldg., G and B level
1:00 p.m. - 4:00 p.m. Poster Session EDII Concourse
1:00 p.m. - 4:00 p.m. Poster Session EDII Concourse

Saturday, April 4, 1998
8:00 a.m. - 10:00 am. Registration EDIII Bldg. Lobby
8:00 a.m. - 11:45 am. Paper Sessions EDII Bldg., Room G141
8:00 a.m. - 11:45 am. Paper Sessions EDII Bldg., Room G141
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SECTION PROGRAMS
* Undergraduate **Graduate

PAPER SESSIONS
Aquatic and Environmental Science/Invertebrate Zoology
Location: EDII Bldg., Room G106

Chairpersons: Dr. John Bush, University of Arkansas at Little Rock
Dr. Joyce Hardin, Hendrix College

Time Topic
1:00 Michael E. Cartwright, Stanely E. Trauth and J. D. Wilhide,
Arkansas Game and Fish Commission, Calico Rock, AR 72519, and Department of Biological Sciences, Arkansas State
University, State Univ., AR 72467. WOOD FROG (RANA
SYLVATICA) USE OF WILDLIFE PONDS IN NORTH-CENTRAL ARKANSAS.

1:15 Stacia S. Vanderpool and E. Leon Richards, Department of
Biological Sciences, Arkansas State University, State
University, AR 72467. A FLORISTIC INVENTORY OF
THREE BOGS ON CROWLEY'S RIDGE IN NORTHEAST ARKANSAS.

1:30 Chris L. Davidson1, John L. Harris2, and George L. Harp2,
1University of Arkansas at Pine Bluff, Agriculture/Fisheries
Center, 1200 N. University, Box 4912, Pine Bluff, AR 72611,
2Arkansas State University, Department of Biological
Sciences, State University, AR 72467. DISTRIBUTION
AND COMMUNITY STRUCTURE OF MUSSELS

Journal of the Arkansas Academy of Science, Vol. 52, 1998
Published by Arkansas Academy of Science, 1998
PAPER SESSIONS

Biomedical Science

Location: EDII Bldg., Room G110

Chairperson: Dr. Tom Kelly, University of Arkansas for Medical Sciences
Dr. Dennis Baeyens, University of Arkansas at Little Rock

Time | Topic
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1:15 | **L. C. Maddox**, P.D. Walker, and P.R. Mayeux. Departments of Pharmacology and Toxicology, and Pathology, University of Arkansas for Medical Sciences, Little Rock, AR 72205. THE ROLE OF INDUCIBLE NITRIC OXIDE SYNTHASE DURING RENAL ISCHEMIA-REPERFUSION INJURY.

CHEMISTRY I

Location: EDII Bldg., Room B107

Chairpersons: Dr. Cesar Compadre, University of Arkansas for Medical Sciences
Dr. Richard Walker, University of Arkansas at Pine Bluff

Time | Topic
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**L. C. Maddox** and Philip R. Mayeux. Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences, Little Rock, AR 72205. ANGIOTENSIN II SIGNAL ACTIVATES THE NO-cGMP PATHWAY IN RAT PROXIMAL TUBULES.

**Dan C. Phan** and Bruce W. Newton. Department of Anatomy, University of Arkansas for Medical Sciences, Little Rock, AR 72205. THE DISTRIBUTION OF CHOLECYSTOKININ-8 AFFERENTS SURROUNDING LUMBO-SACRAL AUTONOMIC NEURONS IS SEXUALLY DIMORPHIC AND ALTERED BY LACK OF ANDROGEN RECEPTORS.

**T. Bowman**, J. N. Pasley, M.E. Soulsby, and P. Chowdhury, Department of Physiology and Biophysics, University of Arkansas for Medical Sciences, Little Rock, AR 72205. ISOLATION AND CHARACTERIZATION OF A CYTOSOLIC NICOTINE BINDING PROTEIN IN ISOLATED PANCREATIC ACINI FROM COPPER DEFICIENT RATS TO CCK8.
Secretary's Report

1:30 *M. Shane Greene, Rose McConnell, and Walter E. Goodwin, Division of Mathematics and Sciences, University of Arkansas at Monticello, Monticello, AR 71656. WEAK ACIDS AND BASES COMMONLY USED IN NMR STUDIES: A pH COMPARISON IN WATER VERSUS DEUTERIUM OXIDE.

1:45 *Rebecca Jackson and Michael J. Panigot. Department of Chemistry, Arkansas State University, State University, AR 72467. STERESELECTIVE SYNTHESIS OF β-DEUTERATED TRYPTOPHAN FROM ASYMMETRIC REDUCTION OF INDOLE-3-CARBOX(ALDEHYDE- D) FOR USE IN SOLUTION-PHASE PROTEIN STRUCTURE DETERMINATION.

2:00 *Kevin Lawrence and Michael J. Panigot. Department of Chemistry, Arkansas State University, State University, AR 72467. EFFECTS OF AROMATIC RING SUBSTITUTION ON THE REARRANGEMENT OBSERVED IN THE ALKYLATION OF ACETOBROMOMOGLUCOSE WITH BENZYL GRIGNARD REAGENTS.

2:15 *Beniamin Hohoabu. Kim Watkins, Dedrick Hayes, Dr. Ray Bakhitria, and Dr. Richard Walker. Department of Chemistry and Physics, University of Arkansas at Pine Bluff, Pine Bluff, AR 71611. EFFECT OF CYCLODEXTRINS ON PRODRUG STABILITY.

2:45 *Bobby L. Barker, Rose McConnell, Walter E. Goodwin, Division of Mathematics and Sciences, University of Arkansas at Monticello, Monticello, AR 71656. MOLECULAR MODELING INVESTIGATION OF 3-SUBSTITUTED POLYFURAN WITH AND WITHOUT CROSS-LINKING.

3:15 *Justin Scarbrough and Michael J. Panigot. Department of Chemistry, Arkansas State University, State University, AR 72467. STERESELECTIVE SYNTHESIS OF δ-DEUTERATED LEUCINE FROM ASYMMETRIC REDUCTION OF ISOBUTYR(ALDEHYDE-d) FOR USE IN SOLUTION-PHASE PROTEIN STRUCTURE DETERMINATION.

PHYSICS/PHYSICAL SCIENCE I Location: EDII Bldg., Room G137

Chairpersons: Dr. Robert Engelken, Arkansas State University
Dr. W. J. Braithwaite, University of Arkansas at Little Rock

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1:00</td>
<td>*Michael Gericke, Philips C. Loizou, and Donald C. Wold, Department of Physics and Astronomy, University of Arkansas at Little Rock, Little Rock, AR 72204. LINEAR TRANSFORMATIONS FOR VOWEL CLASSIFICATION.</td>
</tr>
<tr>
<td>1:15</td>
<td>*Michael Buck, Dr. Robert Engelken, C. Workman, A Thapa, and C. Edrington, Department of Engineering, Arkansas State University, State University (Jonesboro), AR 72467. INDUCTION OF TELLURIUM COMPOUNDS ELECTROPLATED FROM MOLTEN SALT BATHS.</td>
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<tr>
<td>1:30</td>
<td>*Jedediah J. Young, S.N. Yedave, and A.P. Malshe. Materials and Manufacturing Research Laboratory, Department of Mechanical Engineering, University of Arkansas, Fayetteville, AR 72701. THE NEXT GENERATION OF INFLATABLES FOR SPACE APPLICATIONS.</td>
</tr>
</tbody>
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1:45 *R. Engelken, T. Jacobs, B. Johnson, C. Workman, M. Buck, A. Thapa, and C. Edrington, Optoelectronic Materials Research Laboratory, Arkansas State University, Jonesboro, AR 72467. (Mr. Jacobs is with InvoTek, Inc. of Alma, AR.) PHOTOCONDUCTANCE AND OPTICAL ABSORPTION IN InAs FILMS.

2:00 Julie T. Nguyen, W.J. Braithwaite, University of Arkansas, Little Rock AR 72204 and Edwin S. Braithwaite, Science and Mathematics, Cedarville College, Cedarville, OH 45314. MONTE CARLO: SAMPLING THE SPACE AND ALTERNATE FORMULATIONS.

2:15 *Al Thapa, Dr. R. Engelken, M. Buck, C. Workman, C. Edrington, and T. Jacobs Department of Engineering, Arkansas State University, State University (Jonesboro), AR 72467. (Mr. Jacobs is with InvoTek, Inc. of Alma, AR.) IMPROVEMENTS IN PHOTOCONDUCTIVITY IN LARGE AREA AgS FILMS.

2:45 *Trisha Crabbill and Edmond W. Wilson, Jr., Department of Physical Science, Harding University, Searcy, AR 72140-0001. CONSTRUCTION OF A NEAR-INFRARED DIODE LASER SPECTROPHOTOMETER.

3:15 *Clayton Workman. Dr. Robert Engelken, C. Edrington, M. Buck, and A. Thapa, Department of Engineering, Arkansas State University, State University (Jonesboro) AR 72467. IMPROVEMENT IN THE ELECTROPLATING OF CuInS2.

3:45 *Shane M. Doss and Mostafa Hemmati. Physical Science Department, Arkansas Tech University, Russellville, AR 72801. SPEED CUT-OFF POINT FOR ANTIFORCE WAVES.

PHYSICS/PHYSICAL SCIENCE I Location: EDII Bldg., Room G137

Chairpersons: Dr. Robert Engelken, Arkansas State University
Dr. W. J. Braithwaite, University of Arkansas at Little Rock

Time Topic

8:30 *Holly Sawyer and Edmond W. Wilson Jr., Department of Physical Science, Harding University, Searcy, AR 72140-0001. TROPOSPHERIC LIFETIME OF CYCLOPROpane.

8:45 *Philip Williams, Tony Bednar, Eric Barnett, and S.W. Reeve. Department of Chemistry, Arkansas State University, State University, AR 72467. INTERFACING AN INFRARED DIODE LASER SPECTROMETER WITH LABVIEW.

9:00 *Kathy Herin and Edmond W. Wilson, Jr., Department of Physical Science, Harding University, Searcy, AR 72140-0001. TROPOSPHERIC LIFETIME OF HYDROFLUCARBODNS.

9:30 *Wendy L. Johnson, Robert T. Swindell, and Ali U. Shaikh, Department of Chemistry, University of Arkansas at Little Rock, Little Rock, AR 72204. SEPARATION AND QUANTIFICATION OF ISOMERIC DICHLOROBENZOIC ACIDS BY GC AND REVERSED PHASE HPLC.

9:45 Dr. Frank L. Sediff and Leslie B. Coop, Department of Chemistry, University of Arkansas at Little Rock, Little Rock, AR 72204. THE PREPARATION OF METHYL 5-CHLORO-6-FLUORONICOTINATE BY FLUORIDE-CHLORIDE EXCHANGE.

10:00 Break

10:30 Paul M. Nave1, Mark Draganiac, Bryon Ward1, A. W. Cordes2, and Toasa M. Barclay2, 3 Department of Chemistry and Physics, Arkansas State University, State University, AR 72467, 4 Department of Chemistry and Biochemistry, University of Arkansas, Fayetteville, AR 27201. LIGAND SUBSTITUTION OF CpRu(PPh3)2+ WITH TETRAHYDROTHIOPHENE. MOLECULAR STRUCTURE OF [CpRu(PPh3)(tht)2]OTF.

10:45 Richard A. Vanderpool and Wayne T. Buckley USDA, ARS, Grand Forks, Human Nutrition Research Center, Grand Forks, ND 58203 and Agriculture, Canada, Brandon Research Stantion, Brandon, Manitoba Canada R7A 5Y3. LIQUID-LIQUID EXTRACTION OF CADMIUM BY SODIUM DIETHYLDITHIO-CARBAMATE FROM BIOLOGICAL MATRICES FOR ISOTOPE DILUTION ICP-MS.

11:00 M. A. Mikhail, Department of Chemistry & Physics, University of Arkansas at Pine Bluff, Pine Bluff, AR 71601. MICROLEVEL CLIMATE CHANGE DUE TO CHANGE IN SURFACE FEATURES.

11:15 Thomas L. Foji and George Bakenhofer, Arkansas Natural Heritage Commission, Little Rock, AR 71920. SECTION AND SUBSECTIONS OF THE INTERIOR HIGHLANDS OF ARKANSAS AND OKLAHOMA.

11:30 Paul D. Mixon, Department of Engineering, Arkansas State University, State University, AR 72467. SITING HIGH VOLTAGE ELECTRICAL FACILITIES IN ARKANSAS: ENVIRONMENTAL, LEGAL, AND REGULATORY CONSIDERATIONS.

MICROBIOLOGY
Location: EDII Bldg., Room G110

Chairpersons: Dr. Marie Chow, University of Arkansas for Medical Sciences Dr. Scott Kirkconnell, Arkansas Tech University

Time Topic
8:45 *Amy M. Hardwick and F. W. Speigel, Department of Biological Sciences, University of Arkansas, Fayetteville, AR 72701. THE AMOeba BIOTA OF PINEY DITCH SWAMP, MONROE COUNTY, ARKANSAS.

9:00 *Nicole M. Anderson and Shelton Fitzpatrick, Department of Biology, University of Arkansas at Pine Bluff, AR 71601. MICROORGANISMS IN COMMON PLACES.

9:15 *Lori Sale, Tiffany Schirmer, Richard Wirges, Eric Anderson, and Dr. Scott Kirkconnell Arkansas Tech University, Russellville, AR 72801. COLIFORM EVALUATION AND SOURCE DETERMINATION FOR THE RIVER VALLEY WATERWAYS.

9:30 *Kristy Jones and Dr. Juneann Murphy, Department of Biology, John Brown University, Siloam Springs, AR 72761, and Department of Microbiology and Immunology, University of Oklahoma Health Sciences Center, Oklahoma City Oklahoma, 26901. IN VITRO GROWTH CHARACTERISTICS OF TWO CRYPTOCOCCUS NEOFORMANS ISOLATES.

9:45 *Jeremy Alan Warford2, Dr. Paul Hermanson1, and Dr. Joyce Hardin1. 1University of Arkansas for Medical Sciences, Little Rock, AR 72205, 2Hendrix College, Department of Biology, Conway, AR 72032. THE UTILITY OF ADENO-ASSOCIATED VIRUS AS A TRANSDUCTION VECTOR.

10:00 Break

10:30 **Allen Dyel1, James Daly2, James Pasley3, Carl Long4, and David Stuckey5, University of Arkansas for Medical Sciences Department of 1Pharmacology and Toxicology, 2Microbiology and Immunology, 3Physiology and Biophysics, 4Arkansas State Department of Health, and 5Arkansas Children's Hospital, Little Rock, AR 72205. GARDIASIS IN ARKANSAS: AGE DISTRIBUTION AND THE GIARDIA SEASON.

11:00 Rhonda J. Williams, Kenneth F. Sotike, and Wayne L. Gray, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR 72205. RAPID DIAGNOSIS OF SIMIAN VARICELLA USING THE POLYMERASE CHAIN REACTION.

PHYSICS/PHYSICAL SCIENCE II
Location: EDII Bldg., Room B107

Chairpersons: Dr. Roger Hawk, University of Arkansas at Little Rock Dr Edwin Braithwaite, Cedarville College, Cedarville, OH

Time Topic
8:00 Viet V. Dinh, Physics & Astronomy, University of Arkansas, Little Rock, AR 72204 and Edwin S. Braithwaite, Science and Mathematics, Cedarville College, Cedarville, OH 45314. MONTE CARLO VS ANALYTICAL OR CLOSED FORM (PROBLEM) SOLUTIONS.

8:15 Sayed Saeid Algraf, Al-Mahmood, H. A. Naseem, and W. D. Brown, Department of Engineering, University of Arkansas, Fayetteville, AR 72701. EFFECT OF SUBSTRATE TEMPERATURE/FILM THICKNESS ON ELECTRICAL /OPTICAL PROPERTIES OF CDS FILM AND IMPROVEMENT OF FILM QUALITY BY HEAT /CdCl2 Treatment.

8:30 W. J. Braithwaite, Physics and Astronomy, University of Arkansas, Little Rock, AR 72204 and E.S. Braithwaite, Science and Mathematics, Cedarville College, Cedarville, OH 45314. CONTINUOUS MONITORING OF STARS MAIN TIME PROJECTION CHAMBER.

8:45 M. A. Mikhail, Department of Chemistry & Physics, University of Arkansas at Pine Bluff, Pine Bluff, AR 71601; K. Nagaia, faculty of Engineering, Tamagawa University, Machida, Tokyo, Japan; T. Rohn, Instructor of Physical & Chemical
Research, Wako, Saitama, Japan; H. Murakami and A.
Nakamoto, Department of Physics, Rikkyo University, Nish
Ikebukuro, Tokyo, Japan; J. Kituchi and T. Doke, Science &
Engineering Research Lab, Waseda University, Shinjuku,
Tokyo, Japan; and N. Hasebe, Faculty of General Education,
Ehime University, Matsuyama, Ehime, Japan. ANALYSIS
OF OLD SATELLITE DATA: EXOS-C S OBSERVA-
TION OF OFF-EQUATORIAL GLOBAL ZONES OF
ENERGETIC PARTICLE PRECIPITATION.
9:00
* Candace Lindsey, Anthony Bednar, Philip Williams,
Eric Barnett, and S.W. Reeve, Department of Chemistry,
Arkansas State University, State University, AR 72467.
INFRARED LASER SPECTROSCOPY OF JET COOLED MAN-
GANESSE PENTACARBONYL HALIDES.
9:15
* Anthony Bednar, Candace Lindsey, Philip Williams,
Eric Barnett, and S.W. Reeve, Department of Chemistry,
Arkansas State University, State University, AR 72467.
INFRARED LASER SPECTROSCOPY OF JET COOLED MOLE-
CULES.
9:30
Break
10:00
** Timothy W. Wofford and Dr. Roger M. Hawk, Department
of Applied Science, University of Arkansas at Little Rock,
Little Rock, AR 72204. A STUDY OF RUTHENIUM
OXIDE COATING FOR USE IN THIN FILM CAPAC-
ITORS.
10:15
** Dr. Al Adams, Dr. Keith Hudson, Richard Homard,
Applied Science, University of Arkansas at Little Rock,
Little Rock AR 72204. LOW POWER DIODE LASERS FOR
RAMAN SPECTROSCOPY.
10:30
** F. A. Khalifa, M. S. Haque, H. A. Naseem, and W. D.
Brown, Department of Electrical Engineering, University
of Arkansas, Fayetteville, AR 72201. CHARACTERIZATION
OF POLYSILICON FABRICATED BY LOW TEMPERATURE
METAL INDUCED CRYSTALIZATION OF AMORPHOUS SILICON.
10:45
H.A. El Jammal, M. S. Haque, H. A. Naseem, and W. D.
Brown, Department of Electrical Engineering, University
of Arkansas, Fayetteville, AR 72201. PN JUNCTION
DEVICES FABRICATED USING LOW TEMPERA-
TURE METAL INDUCED CRYSTALIZATION OF
AMORPHOUS SILICON.
11:00
E. S. Braithwaite, Science and Mathematics, Cedarville
College, Cedarville, OH 45314, Christine A. Byrd and W.J.
Braithwaite, University of Arkansas, Little Rock, AR 72204.
EFFECTS ON ISOTOPIC DATA OF FINITE SAM-
PLOING & SYSTEMATIC ERRORS.
11:15
Sue Ellen McCloskey, William C. Hall and Wilfred J.
Braithwaite, Department of Physics and Astronomy,
University of Arkansas at Little Rock, Little Rock, AR 72204.
APPLYING BINOMIAL STATISTICS TO WEIGHTED
MONTE CARLO PROBLEMS.
11:30
Mark Anthony Contii, Charles R. Bowlin, Department of
History and W.J. Braithwaite, Department of Physics and
Astronomy, University of Arkansas, Little Rock, AR 72204.
EVIDENCE FOR MASS PRODUCTION OF SWORDS
IN THE TENTH CENTURY.
11:00  J. D. Wilhide, Brady Baker, V. Rick McDaniel, and Michael J. Harvey. Arkansas State University, Department of Biology, State University, AR 72467. Tennessee Technological University, Department of Biology, Cookeville, IN 38505.

BATS OF THE OZARK NATIONAL FOREST: BUFFALO AND SYLAMORE RANGER DISTRICTS.

11:15  David A. Saugey, Robin L. Vaughn, Betty G. Crump and Gary A. Heidt. United States Forest Services, Ouachita National Forest, Hot Springs, AR 71902, Department of Biology, University of Arkansas at Little Rock, Little Rock AR 72204 (GAH). NOTES ON THE NATURAL HISTORY OF LASIURUS BOREALIS CHIROPTERA: VESPERTILIIONIDAE) IN ARKANSAS.

11:30  J. D. Wilhide and Brady Baker, Arkansas State University, Department of Biology, State University, AR 72467.

ARKANSAS RANGE EXTENTION OF THE SEMINOLE BAT (LASIURUS SEMINOLUS).

POSTER SESSION

Location: EDII Bldg., Room G Concourse

Topic

#Sarah Blossom, Kathleen M. Gilbert. Department of Microbiology and Immunology. University of Arkansas for Medical Sciences, 4301 West Markham St., Little Rock, AR, 72205. CD40 LIGAND-EXPRESSING B CELLS FROM BXSB MICE PROMOTE ANTIBODY PRODUCTION.

#Charlotte A. Dayer, Dean Wright, Christopher Moore, and Galen R. Wenger, University of Arkansas for Medical Sciences, Department of Pharmacology and Toxicology, Little Rock, Arkansas 72207-7199. EFFECTS OF SCHEDULES OF REINFORCEMENT AND DRUGS OF ABUSE ON SHORT-TERM MEMORY PERFORMANCE.

#J.K. Divine, R.J. Hine, R. Hakkak, L. Dumenci; University of Arkansas for Medical Science, Department of Dietetics and Nutrition, Slot 627, Little Rock, AR 72207. DIETARY METHIONINE AND ITS RELATIONSHIP TO PLASMA HOMOCYSTEINE LEVELS IN CHILDREN AND ADOLESCENTS.

#Whitney A. Hayes, Jon R. Pierce, Jerry A Farris, Anne A. Grippo, Dept. Biological Sciences, Arkansas State University, State University, AR 72467. VITELLOGENIN PURIFICATION FROM THE SLIDER TURTLES Trachemys scripta

#Jonathan L. Norman, Brian Bakke, David W. Paul, Department of Chemistry and Biochemistry, Chemistry Building, University of Arkansas, Fayetteville, AR 72701. COMPUTER INTERFACING A WENKING POTENTIOSTAT FOR EQCM APPLICATIONS.

#Andrew Strecker, Anne A. Grippo, Dept. Biological Sciences, Arkansas State University, State University, AR 72467; Michael E. Baker, University of California, San Diego. DISPLACEMENT OF STEROID HORMONES FROM SEX HORMONE BINDING GLOBULIN BY PHYTOESTROGENS.