

2011

## 95th Annual Meeting, 2011. Secretary's Report and Financial Statement

Academy Editors

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# JOURNAL ARKANSAS ACADEMY OF SCIENCE

Annual Meeting April 8-9, 2011  
University of Arkansas at Monticello

**Jeff Robertson**  
President

**Anthony K Grafton**  
President-Elect

**Marc Seigar**  
Vice-President

**Jeff Robertson**  
Secretary

**Mostafa Hemmati**  
Treasurer

**Mostafa Hemmati**  
JAAS Editor-in-Chief

**Collis Geren**  
Historian

## *Secretary's Report* MINUTES OF THE 95th MEETING

ARKANSAS ACADEMY OF SCIENCE  
SPRING 2011 BUSINESS MEETING MINUTES  
April 9, 2011  
University of Arkansas at Monticello

1. The meeting was called to order by President Jeff Robertson.
2. Local Arrangements Committee, 2011: Morris Bramlett  
Registration information, campus orientation, and meeting schedules were presented by Morris Bramlett and Glenn Manning, LOC. There were ~170 registered participants, 63 oral presentations and 35 posters.
3. Secretary's Report: Jeff Robertson  
Minutes from the 2010 Fall Executive Committee Meeting in November were reviewed and accepted. There were currently approximately 126 AAS members (48 of which are life members) and 26 new members this past year.
4. Treasurer's Report: Mostafa Hemmati  
An accounting of the AAS "net worth" for 2010 was presented and discussed by the membership. The report was reviewed by an auditing team made of selected members of the Academy and accepted by the membership (see 2010 financial statement).
5. Historian's Report: Collis Geren  
The spring meeting of the Arkansas Academy of Science at the University of Arkansas at Monticello is the 95 annual meeting of the Academy. This meeting marks the fifth time that the Academy has held its annual meeting at UAM. Previous meetings

were in 1936, 1942, 1985, and 1997. The University of Arkansas at Monticello was formally opened in 1910 as the 4th District Agricultural School. In 1925 the name was changed by the legislature to the Arkansas Agricultural and Mechanical College. The institution was accredited as a junior college in 1928 and as a four year college in 1940. It became part of the University of Arkansas System on July 1, 1971.

The role of the Academy in Arkansas continues to expand with the addition of funding for Undergraduate Research Awards as well as support of broader studies of problems of general interest to Arkansas. The online presence of the Academy also continues to develop. The proceedings of the Academy are published in the peer-reviewed Journal, which is available online as a link through the AAS membership pages at <http://www.ArkansasAcademyofScience.org>.

6. Newsletter Editor's Report: Jeff Robertson  
The newsletter was sent out completely electronically and distributed to members past and present, to all academic science department chairs of 4-year and 2-year institutions as well as related institutions throughout the state (e.g. Arkansas Game and Fish, US Forest Service, Natural Heritage Commission, etc).
7. Journal (JAAS #64) Report: Editor-In-Chief Mostafa Hemmati & Managing Editor Ivan Still  
Twenty six manuscripts were submitted for consideration of publication in volume 64 (2010) of the JAAS at the UALR meeting in April 2010. This was a decrease from the 30 submitted in the previous year. This is the second year of declining

## Business meeting report

submissions. Dr. Still checked each manuscript for style, grammar, format, etc. In several cases, authors did not follow the "Instructions to Authors"; so some manuscripts were not ready for submission from the meeting, and some submitted manuscripts being returned to authors shortly after the meeting.

Abstracts were sent to potential reviewers at the end of May resulting in the recruitment of about 70 reviewers, as well as several more who were added to a reviewer database for future journal editions. Dr. Hemmati handled Physical Science papers and recruited Drs. Collis Geren, Dr. Salomon Itza and Dr. Bill Doria to serve as Associate Editors, while Dr. Still handled Biological Science manuscripts. Manuscripts were sent out electronically for review at the beginning of June and reviews returned to the Managing Editor at the end of June/middle of July. The review process proceeded efficiently, aided by the use of e-mail. We have opened a Yahoo account ([jarksci@yahoo.com](mailto:jarksci@yahoo.com)) specifically for JAAS to overcome some of issues with email servers treating ATU email as a junk. The Yahoo account was used for most outgoing reviews, and communication to authors was handled via Dr Still's ATU account ([istill@atu.edu](mailto:istill@atu.edu)). Between the two email systems, no e-mails appeared to be lost this year!

Most authors were contacted by e-mail in the middle week of July 2010 and informed if their paper was accepted with the need for minor or major revision or whether their paper was rejected. Of the papers sent out for peer review, two manuscripts were unanimously rejected by the three reviewers due to significant issues with and/or lack of novel data. Most required minor revision while five required major revisions. All authors were asked to return their revisions to the Managing Editor electronically within six weeks of receipt of the review by their e-mail system, with the page charges being submitted to Dr. Hemmati, Editor-in-Chief. Two manuscripts were withdrawn without prejudice by the corresponding authors, and we made the suggestion that authors resubmit their papers at the next meeting. No manuscripts were lost from the meeting, suggesting that the new manuscript submission system prior and at the annual meeting and the complete adoption of electronic manuscript processing, has overcome meeting associated submission issues.

The journal was assembled by the end of December. Vol. 64 is 160 pages long with 125 pages of submitted manuscripts.

We would like to thank the reviewers and

Assistant/ Associate Editors for their help in the preparation of volume 64, and finally the corresponding authors of submitted manuscripts and the reviewers for the mostly successful implementation of journal submission requirements.

### 8. Committee Reports:

#### a. AAAS Representative Report: Scott Kirkconnell

The American Association for the Advancement of Sciences (AAAS) meetings February 17-22, 2011 Washington DC.

Representing the Arkansas Academy of Science, I attended the annual combined meeting of NAAS/AAAS in Washington DC.; February 17-22, 2011. The AAAS opening ceremony and President's Address Thursday night involved a broad-ranging discussion of President Alice Huang's scientific life journey, research interests, an interpretation of where science "is" in the United States, recognition of attending Junior Academy members, etc. The affiliates' meeting the next morning included a somewhat shocking yet very engaging description of the recent earthquakes' devastating impact on Haiti. The afternoon (1-3 p.m.) NAAS Council of Science Academy Presidents and Executive Directors meeting included exchanges on numerous topics that are quite pertinent to the Arkansas Academy of Sciences. The following NAAS forum provided an opportunity for extremely rich exchanges between members of the various state academies on issues of common interest (47 academies are in NAAS, although fewer than half of them were represented at this session). I attended a potpourri of sessions during the following four days including discussions of science funding, interdisciplinary biomimetics, the human-biosphere interface and its monitoring through evaluation of metal use patterns by various countries, research frontiers in sustainability, dynamics of conflict and cooperation, integrative approaches to comprehending the politics of natural resource policies, evolutionary and genetic dialectic tensions between self-serving and societal motives, efforts to merge neuroscience; genomics; and anthropology, initiatives to strengthen undergraduate and precollege curricula through introduction and creative uses of new modalities such as M.I.T.'s Open Courseware; HHMI's institutional grants; three-dimensional complementary protein models; and cost-effective educational laboratory software. Representatives of the Max Plank Institute

**Business meeting report**

described some absolutely amazing work entitled "How Organisms Talk to Each other (chemically speaking)." This research was forthrightly (and quite accurately) introduced as "A study of the incomprehensible by the incompetent." The work most elegantly established the explosive power of synergy between the revolutions in information science, instrumentation, and chemistry. These investigators recognize they have barely scratched the surface in cataloging the more than 300,000 metabolites plants produce and often use to communicate with one another and other elements of the biosphere. Participating chemicals are being evaluated at the atomic level and the information processing accomplished by the few plants they have studied in southern Utah has opened the door to comprehension that our ignorance is orders of magnitude greater than we ever suspected. One presenter concluded his talk with the comment, "We are NEVER going to be able to store even a small portion of this biological information in freezers."

**b. Development Committee: Anthony Grafton**

In April of last year, the AAS authorized me to manage a membership recruitment campaign and seek was to broaden the awareness and impact of the Academy. In support, the Academy provided \$2750 to be used for expenses. After the beginning of the new fiscal year in late summer, I requested and received the money from the AAS Treasurer and deposited it in a Lyon College account from which I have spent as follows:

Starting balance:	\$2,750.00
Mailing materials (paper, envelopes, ink, etc.):	\$ 352.46
Postage:	\$ 196.91
Stipend (employee to help prepare the <i>AAS Spotlight</i> ):	\$ 527.03
Total Expenses	\$1,076.40
Check back to AAS	\$1,673.60
Current Balance	\$ 0.00

The expenses have supported direct letters to hundreds prospective members. New members have been sent a membership card and certificate. In addition to the traditional paper method of joining the Academy, I have created a web page (<http://www.compchem.org/aas>) that allows people to join quickly online and be billed later.

As a way of increasing the visibility and relevance of the Academy, I initiated the creation and distribution of the *AAS Spotlight*, a simple newsletter-style publication designed to highlight

one Arkansas scientist in each issue. As described to the Academy leadership when the idea was proposed, I hired a local individual (Leslie Malland) to conduct interviews and prepare the *Spotlight*. Issues can be viewed here: <http://www.compchem.org/aas/Spotlight/>

Additionally, I have created an online membership database that allows members to update contact information and officers to access all the information for non-student members. This database is current found at <http://www.compchem.org/aasmembers>.

Since the membership drive began in August, 26 people have joined (or re-joined) the Academy, resulting in an 18% increase in non-student membership. The money received (or due) from these new members totals approximately \$900, which is about \$200 less than the money spent on the campaign.

I would ask the Executive Committee to decide if this campaign should continue during the coming year, and, if so, determine how best to fund it.

I would also ask the Executive Committee to recognize and discuss the importance of involving and retaining new members for the long-term health of the Academy.

**9. Business Old and New:**

- The 96<sup>th</sup> annual AAS meeting will be April 13-14, 2012 at Southern Arkansas University Hosts for future meetings are solicited.
- Could there be incentives and rewards for membership? (i.e. cheaper pre-registration, discounts for early renewal of membership, etc.)
- Fund up to four AAS Undergraduate research awards. Require them to present at annual meeting with a report written upon completion of research due May 1 to Academy (publication in JAAS in lieu of report also acceptable).

**10. Actions and Motions Items:**

- AAS constitution and by-laws need review at Executive Committee Meeting.
- Continuation of AAS Undergraduate Research Awards approved.
- Submit letter of recognition to \$1,000 institutional sponsoring officials and recognition in the JAAS.
- Non-JAAS budget approved:
 

\$2,500	Undergraduate Research Grants
\$2,000	Development/Membership campaign (Kurt Grafton)

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\$1,000	AAAS representative travel (Scott Kirkconnell)
\$ 250	Affiliate student awards (Junior Academy)
\$ 400	Affiliate student awards (Arkansas Science Fair)
\$ 100	Affiliate student awards (AJSHS)* Affiliate student awards (Arkansas Talent Search, *if requested)
\$1,400	AAS Spring meeting student awards
<u>\$ 200</u>	AAS Secretary, journal mailings
<b>\$7,850</b>	<b>TOTAL</b> (outside of costs associated with JAAS publication)

- e. Bill Doria elected to Vice-president and assuming webmaster duties.
- f. Marc Siegar taking over as newsletter editor.

**11. Undergraduate Research Awards: Kurt Grafton**

We received five applications for funding under the AAS URA program. Three people have reviewed the applications: Dr. Collis Geren, Dr. Jeff Robertson, and myself. Each reviewer ranked the proposals, and the top three were funded, which is the same number we funded last year. I request that the Executive Committee discuss and determine whether the Academy should continue the AAS URA program in its current form. I recommend that we do.

**12. Incoming Presidential Address from Kurt Grafton: Thoughts on 2017 and the future of Academy meetings**

The 100<sup>th</sup> annual meeting of the AAS is five years away. This should be a major event, and major events take planning. I propose the following as we approach this major milestone in the history of the Academy.

- a. The 100<sup>th</sup> annual meeting should be held in Little Rock, the capital and clearly the most central location in the state.
- b. The 100<sup>th</sup> annual meeting should be held not on a campus, but at an appropriate convention center or hotel that can accommodate such an event.
- c. The 100<sup>th</sup> annual meeting should be planned by the officers of AAS along with two or three volunteers from the Academy.
- d. The 100<sup>th</sup> annual meeting should be three full days (Thursday through Saturday) and should include things like a speech by the Governor and other activities appropriate to such an occasion.
- e. The 100<sup>th</sup> meeting should be the target date for the Academy to carry out one of our major, Constitutionally-defined functions of "...unification

of [scientific] interests in the State." Therefore, we should work to include as many of the following organizations' regular meetings in the annual AAS meeting as possible:

- i. The Arkansas Space Grant Consortium
- ii. Arkansas INBRE
- iii. Arkansas Undergraduate Research Conference
- iv. Arkansas State Science Fair
- v. Arkansas Junior Academy of Science
- f. The ultimate goal should be to have the 100<sup>th</sup> meeting to be the first meeting that includes all of the organizations mentioned above, and have that cooperation continue after that point. Such inclusion will require some groups to move meetings from the spring to the fall, or vice-versa.
- g. The annual meetings after the 100<sup>th</sup> should all be held in Little Rock. The officers of the AAS should be the primary planners of each subsequent meeting along with a "host" institution that would be involved in the planning and operation of the meeting. Doing it this way will provide ongoing consistency in meeting planning and registration that we lack now. It will also allow the Academy to make long-term planning decisions in how the meetings are conducted that are, now, left up to host institutions.

Meeting adjourned  
Jeff Robertson, AAS Secretary

**Treasurer's Report  
ARKANSAS ACADEMY OF SCIENCE  
2011 FINANCIAL STATEMENT  
December 21, 2011**

<b>Balance – December 21, 2011</b>	<b>\$79,787.95</b>
<b>Balance – December 16, 2010</b>	<b><u>\$73,303.29</u></b>
<b>Net Gain</b>	<b>\$ 6,484.66</b>

**DISTRIBUTION OF FUNDS**

Checking Account Bank of the Ozarks, Russellville, AR, December 21, 2011	<b>\$13,848.63</b>
Certificate of Deposit Life Membership Endowment, Bank of the Ozarks, Russellville, AR, December 1, 2011 Previous CD + \$3,000 from the Bank of Ozark's Checking, New Maturity Date 06-11-2012	<b>\$18,358.68</b>

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**Dwight Moore Endowment + \$20,617.62**  
 (Dwight Moore's final balance of \$6,002.73+  
 Short term CD's final balance of \$4,157.77+  
 \$9,839.50 from the Bank of the Ozarks checking account = \$20,000.  
 The new CD will mature on 12-10-2011)

**Phoebe and George Harp Endowment + \$18,745.81**  
 (\$7601Harp+\$6515.15CD+\$3383.85Checking)  
 =\$17500 CD + Interest Paid  
 After maturity in Bank of America, opened a new CD in Bank of the Ozarks  
 on Nov. 15, 2010. Maturity Date 07-15-2012; December 1, 2011

**Short Term CD \$8,217.21**  
 Bank of the Ozarks, Russellville, AR, October 25, 2010  
 New Maturity date 03-27-2012, December 1, 2011

**Combined interest on all accounts as of December 1, 2011 was \$660.55**

**TOTAL \$79,787.95**

**INCOME:**

1. Transfer from CD to Checking **-0-**

**2. GIFTS RECEIVED**

a. Ouachita National Forest - Sponsorship \$1,000  
 b. Karen Arbuckle, Cossatot \$30

**\$1,030**

**3. INTEREST (Interest Earned Year to Date, ~ December 1, 2011)**

a. Checking Account, Bank of the Ozarks, ...448 \$8.77  
 b. CD1 (Bank of the Ozarks), .....929 \$176.22  
 c. CD2 (Bank of the Ozarks), .....594 \$100.00  
 d. CD3 (Bank of the Ozarks), .....583 \$202.16  
 e. CD4 (Bank of the Ozarks).....396 \$173.40  
 All interests were added to the CDs \$660.55

**4. JOURNAL**

a. Page Charges \$8,400  
 b. Laurence Hardy, 1 copy \$50  
 c. Copyright Clearance Center \$111.12  
 d. Two copies, AR Natural Heritage \$107.50  
 e. Subscriptions, University of Arkansas \$1,500

**\$10,168.62**

**5. JOURNAL CONTRIBUTION -0-**

**6. MEMBERSHIP**

a. Associate-Student \$60  
 c. Individual \$690  
 d. Institutional \$400  
 e. Life (Ivan Still) \$125  
 f. Sponsoring \$90  
 g. Individual from Annual Meeting (UALR) \$1,140  
 h. Sustaining \$35

**\$2,540**

**7. MISCELLANEOUS INCOME**

a. Returned check from membership drive \$1,673.60

b. Unused undergraduate research grant \$400  
 c. Returned undergraduate research grant(Joyce) \$500  
**\$2,573.60**

**TOTAL INCOME \$16,312.22**

**EXPENSES****1. STUDENT AWARDS**

1. James Playford \$100  
 2. Jessica Hartman \$50  
 3. Roy Downs \$50  
 4. Magsood Ali Mughal \$100  
 5. Shyam Thapa \$50  
 6. Claudia Gonzalez \$100  
 7. Nicole Segear \$50  
 8. Drew Jones \$100  
 9. David Graves \$50  
 10. Erin Basiger \$50  
 11. Chris Paight \$100  
 12. Francis Poole \$100  
 13. Fanchon Laster \$50  
 14. Kristopher Watson \$50

**\$1,000**

**2. AWARDS (Organizations)**

a. Junior Science and Humanities Sym. \$100  
 b. Arkansas State Science Fair \$400  
 c. Arkansas Junior Academy of Science \$250  
 d. Arkansas Science Talent Search -0-

**\$750**

**3. UNDERGRADUATE RESEARCH AWARDS**

a. Dr. Willyard, Hendrix College \$500  
 b. Dr. Hardin, Hendrix College \$500  
 c. Dr. Kissel, UA Monticello \$500  
 d. Dr. Reyna, OBU \$500

**\$2,000**

**4. JOURNAL**

a. Volume 64 Printing Cost \$2,713.54  
 b. Journal Mailing Cost \$50.76  
 c. Journal Editorial Cost -0-

**\$2,764.30**

**5. NEWSLETTER**

**-0-**

**6. MISCELLANEOUS EXPENSES**

1. Partial Reimbursement, Dr. Kirkconnell's Trip \$855.10  
 2. Kurt's payment for cost of plaque \$43.44  
 3. Presentation Awards' mailing cost \$15.12  
 4. Membership Drive, Kurt \$2000  
 5. Payment to Secretary of State's Office, Mostafa \$3.50  
 6. Reimbursement of keynote speaker's plane ticket \$600.03  
 7. Department of Treasury (IRS) \$100  
 8. Application for recognition of Tax Exemption \$350  
 9. Payment of the Biota Committee \$130

**\$4,097.19**

**7. TRANSFER TO CD from Checking -0-**

**TOTAL EXPENSES \$10,611.49**



**Business meeting report**

**ARKANSAS ACADEMY OF SCIENCE  
COST OF JOURNAL**

VOLUME	COPIES	PAGES	PRINTER CHARGE	TOT. VOL. COST	COST/COPY	COST/PAGE
35 (1981)	450	96	\$3,694.68	\$4,620.99	\$10.27	\$48.14
36 (1982)	450	110	\$5,233.28	\$5,291.69	\$11.76	\$48.11
37 (1983)	450	103	\$5,326.91	\$5,944.44	\$13.21	\$57.71
38 (1984)	450	97	\$5,562.97	\$6,167.72	\$13.71	\$63.58
39 (1985)	450	150	\$7,856.20	\$8,463.51	\$18.81	\$56.42
40 (1986)	450	98	\$6,175.20	\$6,675.20	\$14.23	\$68.11
41 (1987)	450	116	\$7,122.79	\$7,811.25	\$17.36	\$67.34
42 (1988)	450*	116	\$7,210.79	\$7,710.15	\$17.13	\$66.47
43 (1989)	450*	119	\$8,057.24	\$8,557.24	\$19.02	\$71.91
44 (1990)	450*	136	\$9,298.64	\$9,798.64	\$21.77	\$72.05
45 (1991)	450*	136	\$9,397.07	\$9,929.32	\$22.06	\$73.01
46 (1992)	450*	116	\$9,478.56	\$10,000.56	\$22.22	\$86.21
47 (1993)	400	160	\$12,161.26	\$12,861.26	\$32.15	\$80.38
48 (1994)	450	270	\$17,562.46	\$18,262.46	\$40.58	\$67.63
49 (1995)	390	199	\$14,725.40	\$15,425.40	\$39.55	\$77.51
50 (1996)	345	158	\$11,950.00	\$12,640.75	\$36.64	\$80.00
51 (1997)	350	214	\$14,308.01	\$15,008.01	\$42.88	\$70.13
52 (1998)	350	144	\$12,490.59	\$13,190.59	\$37.69	\$91.60
53 (1999)	350	160	\$13,686.39	\$14,386.39	\$41.10	\$89.91
54 (2000)	350	160	\$14,149.07	\$14,849.07	\$42.43	\$92.81
55 (2001)	360	195	\$16,677.22	\$17,498.22	\$48.61	\$89.73
56 (2002)	350	257	\$18,201.93	\$19,001.93	\$54.29	\$73.94
57 (2003)	230	229	\$14,415.12	\$15,715.12	\$68.33	\$68.62
58 (2004)	210	144	\$7,875.76	\$9,175.76	\$43.99	\$63.72
59 (2005)	215	226	\$16,239.04	\$17,835.84	\$82.96	\$78.92
60 (2006)	220	204	\$11,348.06	\$12,934.30	\$58.79	\$63.40
61 (2007)	195	150	\$8,196.84	\$9,914.69	\$50.84	\$66.10
62 (2008)	220	166	\$2,865.00	\$2,967.49	\$13.49	\$17.88
63 (2009)	213	206	\$3,144.08	\$3,144.08	\$14.76	\$15.26
64 (2010)	232	158	\$2,713.54	\$2,764.30	\$11.91	\$17.50

The Total Volume Cost equals the printer's charge plus the other miscellaneous charges.

- On Volume 42 the Academy received 560 copies, but the printer did not charge us for the extra 110 copies. For comparison purposes the calculated cost/copy is based on 450 copies.
- On Volume 43 the Academy received 523 copies, but the printer did not charge us for the extra 73 copies. For comparison purposes the calculated cost/copy is based on 450 copies.
- On Volume 44 the Academy received 535 copies, but the printer did not charge us for the extra 85 copies. For comparison purposes the calculated cost/copy is based on 450 copies.
- On Volume 45 the Academy received 594 copies, but the printer did not charge us for the extra 144 copies. For comparison purposes the calculated cost/copy is based on 450 copies.
- On Volume 46 the cost was greater than usual due to the high cost of a second reprinting of 54 copies by a different printer.

**Business meeting report****APPENDIX A****2011 AAS PRESENTATION AWARD WINNERS****GRADUATE STUDENT AWARDS****Poster Awards**

**1<sup>st</sup> Place:** Preliminary Gene Flow Estimates over Small Distances in the Pyramid Elimia, *Elimia Potosiensis*, from Arkansas by Paight, Chris J.; Minton, Russell L. of the University of Louisiana at Monroe.

**Oral Presentation Awards****Life Sciences**

**1<sup>st</sup> Place:** Novel Dual-Phase Ultra Performance Liquid Chromatography–Tandem Mass Spectrometry Assay for Profiling Enantiomeric Hydroxywarfarins and Warfarin in Human Plasma by Jones, Drew R.; Boysen, Gunnar; Miller, Grover P. of the University of Arkansas for Medical Sciences.

**2<sup>nd</sup> Place:** Flooding Effects on the Space Use of White-Tailed Deer within the Mississippi Alluvial Flood Plain by Graves, David; White Jr., Don, Jr.; Felix-Locher, Alexandra; Weih, Robert C. of the University of Arkansas at Monticello.

**3<sup>rd</sup> Place:** Status Survey of the Diversity and Distribution of Freshwater Gastropods in the Mississippi Alluvial Plain and South Central Plains of Arkansas by Basiger, Erin L; Minton, Russel L. of the University of Louisiana at Monroe.

**Physical Sciences**

**1<sup>st</sup> Place:** Electrodeposition of Indium Sulfide Films From Organic Solutions-Part II by Mughal, Maqsood Ali; Newell, Michael; Vangilder, Josh; Hall, John; Felizco, Frederick; Thapp, Shayam of Arkansas State University.

**2<sup>nd</sup> Place:** Optimization and Characterization of Binders, Encapsulants, and Densification for Biofuel Pellets by Thapa, Shyam; Engelken, Robert; Newell, M.J.; Mughal, M.A.; Felizco, F.; Vangilder, J. of Arkansas State University.

**UNDERGRADUATE STUDENT AWARDS****Poster Awards**

**1<sup>nd</sup> Place:** Photoinduced Extrusion of Nitric Oxide from a Ruthenium Nitrosyl Complex by Poole, Francis; Felton, Charlette M.; Mebi, Charles A. of Arkansas Tech University.

**2<sup>nd</sup> Place:** Rapid Quantitative Method for Salicin from a Willow Tree by Utilizing an Attenuated Total Reflectance (ATR) Fourier Transform Infrared (FT-IR) Spectrometer by Laster, Fanchon P.; Anderson II, Terry L.; Hahn Frank of Philander Smith College.

**3<sup>rd</sup> Place:** Determining Neutron Flux of a Plutonium-Beryllium Source using Neutron Activation of Indium by Watson, Kristopher; Fenske, Jacob D.; Xu, Shuang; Frederickson, Carl F.; Addison, Stephen R.; Mehta, Rahul of the University of Central Arkansas.

**Oral Presentation Awards****Life Sciences**

**1<sup>st</sup> Place:** Molecular Genetic Analysis of Microbial Life in Blanchard Springs Caverns, Arkansas by Gonzalez, Claudia P.; Shields, Jonathan M.; Story, Lauren M.; Engman, James A. of Henderson State University.

**2<sup>nd</sup> Place:** Evolutionary Relationships of the ‘Sky Island’ Pines Based on Nuclear, Chloroplast, and Mitochondrial Data by Segear, Nicole A. of Hendrix College.

**Physical Sciences**

**1<sup>st</sup> Place:** Thermal Conductivity of Stainless Steel and Cellular Foams by Playford, James; Kanthabhabha, Rahul; Pidugu, Srikanth B.; Midturi, Swaminadham of University of Arkansas at Little Rock.

**2<sup>nd</sup> Place:** Styrene and its Metabolites Exhibit Potential for Multiple-Site Interaction with CYP2E1 by Hartman, Jessica H.; Boysen, Gunnar; Miller, Grover P. of the University of Arkansas for Medical Sciences and the University of Arkansas at Little Rock.

**3<sup>rd</sup> Place:** Determining The Temperature Dependent Young's Modulus of Monolayer and Bilayer Graphene Sheets using Molecular Dynamic Simulation by Downs, Roy; Scrivenner, Dakota; Terdalkar, Scabin S.; Rencis, Joseph J. of the University of Arkansas at Fayetteville.



**Business meeting report**

**APPENDIX B  
RESOLUTIONS**

**Arkansas Academy of Science  
95<sup>th</sup> Annual Meeting, 2011 Resolutions**

Be it resolved that we, the membership of the Arkansas Academy of Science, offer our sincere appreciation to the University of Arkansas at Monticello for hosting the 95<sup>th</sup> annual meeting of the Arkansas Academy of Science. We thank the Local Arrangements Committee: Chair, Glenn Manning, Morris Bramlett, Lynne Thompson, Robert Ficklin, Tracie Jones, the faculty of the University of Arkansas at Monticello and all of the student workers and staff, particularly Leslie Lowery, secretary of Mathematical and Natural Sciences, who collectively contributed to such a successful meeting. Appreciation is expressed for the use of these superior facilities at the University of Arkansas Monticello, and the hospitality shown to us by the School of Forest Resources and their staff. We especially thank our keynote speaker, Dr. Don White Jr., for his keynote presentation entitled "The Space Use Ecology of Male Elk in Arkansas". We thank the University of Arkansas at Monticello for their donations to the Mixer and Banquet, which were both excellent and thoroughly enjoyed by all. We thank University of Arkansas at Monticello Chancellor, Jack Lassiter for hosting the AAS, and Provost, David Ray for his welcome address.

The Academy recognizes the important role assumed by Session Chairs and expresses sincere appreciation to: Mostafa Hemmati (Physics 1), Charles Mebi (Chemistry 1), Forrest Payne (Environmental Science), Andres Bacon (Invertebrate Zoology), Carl Fredericson (Physics 2), Hasim Ali (Chemistry 2), Grover Miller (Medical Science), Lynne Thompson (Invertebrate/Vertebrate Zoology), Marc Seigar (Physics 3), Karen Fawley (Botany/Microbiology), John Hunt (Vertebrate Zoology). We also recognize the contribution of the judges who facilitate student participation and awards, in particular Ed Bacon, Mary Stewart, Susanne Wache, Scott Kirkconnell, Tracy Hawkins, Ed Bacon (Life Science Judges), Soloman Itza, Andy Williams, Stephen Addison, Anwar Bhuiyan (Physical Science Judges), Jeff Robertson, Robert Eoff, and Ann Willyard (Poster Judges).

We gratefully acknowledge the various directors of the science and youth activities, which are supported and supervised by the Academy: Betty Crump and Kurt Grafton, Development; Tillmon Kennon, Science Education Committee; William Slaton, Arkansas

Science Talent Search; Nolan Carter, Junior Academy of Science; Mark Bland, Arkansas Science Fair; Linda Kondrick, Arkansas Junior Science and Humanities Association; and Scott Kirkconnell, the representative to the AAAS. We wish to thank all those who served as directors at Regional Science Fairs and Junior Academy Meetings.

We congratulate all who presented papers and posters at this meeting. Student participants are especially recognized since their efforts contribute directly to the future success of the Academy and the improvement and advancement of science in Arkansas.

The continued success of the Academy is due to its strong leadership. We offer sincere thanks to our officers for another excellent year: Jeff Robertson (President), Kurt Grafton (President-Elect), Marc Seigar (Vice-President); Scott Kirkconnell (Past-President), Jeff Robertson (Secretary), Mostafa Hemmati (Treasurer), Mostafa Hemmati (Journal Editor-in-Chief), Ivan Still (Journal Managing Editor), Jeff Robertson (Newsletter Editor), Bill Doria (Webmaster), and Collis Geren (Historian).

The Arkansas Academy of Science Executive Committee expresses its profound gratitude to Mostafa Hemmati and Ivan Still for their excellent work on the Journal of the Academy, which has directly and positively affected the excellent financial position of the Academy.

Respectfully submitted this 9<sup>th</sup> day of April 2011.

Resolution Committee  
Marc Seigar, AAS Vice President  
Glenn Manning, UAM LOC Chair

**Business meeting report****2010-2011 MEMBERSHIP****LIFE MEMBERS****REGULAR MEMBERS**

FIRST MI.	LAST NAME	INSTITUTION
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Vernon	Bates	Ouachita Mountains
Floyd	Beckford	Lyon College
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Calvin	Cotton	Geographics Silk Screening Co.
Betty	Crump	Ouchita National Forest
James	Daly	UAMS
Leo	Davis	Southern Arkansas University
Mark	Draganjac	Arkansas State University
Jim	Edson	University of Arkansas-Monticello
Kim	Fifer	UAMS
James H.	Fribourgh	University of Arkansas-Little Rock
Arthur	Fry	University of Arkansas
Collis	Geren	University of Arkansas
John	Giese	Ark. Dept. of Env. Qual. (ret)
Walter	Godwin	University of Arkansas-Monticello
Anthony	Grafton	Lyon College
Joe M.	Guenter	University of Arkansas-Monticello
Joyce	Hardin	Hendrix College
George	Harp	Arkansas State University
Phoebe	Harp	Arkansas State University
Gary	Heidt	UALR
Mostafa	Hemmati	Arkansas Tech University
Philip	Hyatt	Retired
Douglas	James	University of Arkansas
Ronald	Javitch	Natural History Rare Book Found.
Arthur	Johnson	Hendrix College
Cindy	Kane	UAMS
Scott	Kirkconnell	Arkansas Tech University
Roger	Koeppe	University of Arkansas
Roland	McDaniel	FTN Associates
Grovel	Miller	UAMS
Herbert	Monoson	ASTA
Mansour	Mortazavi	UAPB
James	Peck	UALR
Michael	Rapp	University of Central Arkansas
Dennis	Richardson	Quinnipiac College
Jeff	Robertson	Arkansas Tech University
Henry	Robison	Southern Arkansas University
Benjamin	Rowley	University of Central Arkansas
David	Saughey	U.S. Forest Service
Ivan	Still	Arkansas Tech University
Stanley	Trauth	Arkansas State University
Gary	Tucker	FTN Associates
Renn	Tumlison	Henderson State University
Scott	White	Southern Arkansas University
James	Wickliff	University of Arkansas
Robert	Wiley	University of Arkansas-Monticello
Steve	Zimmer	Arkansas Tech University

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Karen	Arbuckle	Cossatot CC, University of Arkansas
Hasim	Ali	Arkansa State University
Scott	Austin	
Abdel	Bachri	Southern Arkansas University
Brent	Baker	Arkansas Natural Heritage Comission
Claude	Baker	Southern Arkansas University
Linda	Bates	South Arkansas Community College
Daniel	Beard	Robert F. Morehead Mid. School, PB
Earl	Benjamin	Arkansas State University
Ellis	Benjamin	Arkansas State University
Brian	Berry	UALR
Anwar	Bhuiyan	Arkansas Tech University
Viktoriya	Black	Southern Arkansas University
Pierre	Boumtje	Southern Arkansas University
Don	Bragg	US Forest Service
Morris	Bramlett	University of Arkansas-Monticello
Jennifer	Brinegar	University of Central Arkansas
Tom	Buchanan	University of Arkansas-Ft.Smith
Debra	Burris	University of Central Arkansas
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Matthew	Connior	South Arkansas Community College
Mari	Davidson	UAMS
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Rudolph	Eichenberger	Southern Arkansas University
James	Engman	Henderson State University
Robert	Eoff	University of Arkansas-Monticello
Alexandra	Felix-Locher	University of Arkansas-Monticello
Robert	Ficklin	University of Arkansas-Monticello
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Stephen	Grace	UALR
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Franklin	Hardcastle	Arkansas Tech University
Lawrence	Hardy	Ouachita Mountain Biological Station
John	Harris	AHTD
Courtney	Hatch	Hendrix College
Tracy	Hawkins	USDA Forest Service
Jinming	Huang	University of Arkansas-Monticello
Stuart	Hutton	Lyon College
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Salomon	Itza	University of the Ozarks
Wasmaa	Jabbar	UALR
Cynthia	Jacobs	Arkansas Tech University
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George P.	Johnson	Arkansas Tech University
Ronald	Johnson	Arkansas State University
Susan	Johnson	South Arkansas Community College
Austin	Jones	NW Arkansas Comm. Coll.
Tillman	Kennon	Arkansas State University
Robert	Kissell	
William	Kist	Southern Arkansas University
Maurice	Kleve	UALR
Linda	Kondrick	Arkansas Tech University
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Brenda	Lauffart	Arkansas Tech University
Ganna	Lyubartseval	Southern Arkansas University
Nancy	Marley	UALR

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Rahul	Mehta	University of Central Arkansas
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Tate	Wentz	ADEQ
Anne	Willyard	Hendrix College
Tsunemi	Yamashita	Arkansas Tech University
Bin	Zhang	Arkansas State University

FIRST MI.	LAST NAME	INSTITUTION
Daniel	Beauford	Arkansas Center for Space/ Planetary Sciences-Eureka Springs
Andrew	Bedinghaus	UALR
William	Childs	Arkansas Tech University
Charlette	Felton	Arkansas Tech University
Rahul	Jeya	UALR
James	Miller	Arkansas State University
James	Playford	UALR
Francis	Poole	Arkansas Tech University
Zachary	Powers	UALR
Britney	Rosenthal	Arkansas Tech University
Dacen	Waters	Arkansas Tech University

## MAJOR INSTITUTIONAL SPONSORS

The Arkansas Academy of Science is an essential component in the science, technology, engineering and math pipeline for Arkansas. As a coalition of Arkansas scientists, it provides a local vehicle for presentation and publication of early scientific accomplishments in Arkansas. By promoting the work of Arkansas students, the Academy increases collaboration among the scientific community and provides a comprehensive network for scientific academics. These endeavors promote a higher standard of education within Arkansas and will encourage and promote a higher quality of life through educational opportunities.

As an integral part of the development and promotion of the Academy's mission, we wish to recognize the commitment and continued support of our Institutional Sponsors, The Arkansas Natural Heritage Commission and the Ouachita National Forest.

### ARKANSAS NATURAL HERITAGE COMMISSION



Since 1973, the Arkansas Natural Heritage Commission (ANHC) has been working to conserve Arkansas's natural landscape. ANHC conducts research to determine which elements (species and natural communities) are most in need of protection. Field inventory documents the locations of elements of conservation concern. Information is also gathered from other sources, such as herbarium and museum collection records, and scientific publications such as the *Journal of the Arkansas Academy of Science*. ANHC's current strategic planning goals include working to expand the ecological literacy of Arkansans. The Arkansas Academy of Science is a critical partner in helping to address this goal and, in the long term, protect the natural heritage of our state. For more information about the ANHC research, inventory and protection efforts, including the System of Natural Areas around the state, visit the agency website at [www.naturalheritage.com](http://www.naturalheritage.com). Here is a link to the current newsletter featuring our support info as well. <http://www.naturalheritage.com/enews/archive.aspx?mid=13361>.

### OUACHITA NATIONAL FOREST



Stretching from near the center of Arkansas to southeast Oklahoma, the pristine 1.8 million acre Ouachita National Forest is the South's oldest national forest, established on December 18, 1907 by President Theodore Roosevelt. Rich in history, the rugged Ouachita Mountains were first explored in 1541, by Hernando DeSoto's party of Spaniards. French explorers followed, flavoring the region with names like Fourche la Fave River. "Ouachita" is the French spelling of the Native American word "Washita" which means "good hunting grounds." The Forest's ecosystem management policy guarantees its management regime as an ecological approach, based upon the most current knowledge and best science, for providing multiple benefits from the Forest and encouraging careful use of the forest for the future. The research local to Arkansas and the Forest published by the *Journal of the Arkansas Academy of Science* is critical to informing and supporting appropriate management decisions, environmental assessments and biological evaluations. The Ouachita National Forest extends support of the Academy's efforts through this sponsorship.

For more information about the Forest, visit our webpage at: <http://www.fs.fed.us/r8/ouachita>.

## **A TRIBUTE TO Dr. JOYCE M. HARDIN**



**Joyce M. Hardin, Ph.D.**, has been the Judy and Randy Odyssey Professor of Biology at Hendrix College since 1989, and is currently the Environmental Studies Chair at Hendrix University. She received her Ph.D. (1981), and M.S. (1979) from the University of Arkansas and her B.S. from the College of Charleston (1975). She currently works in the D. W. Reynolds building (Rm 231), and can be reached at (501) 450-1484; (501) 450-1455(Fax) or Email: hardin@hendrix.edu

Dr. Joyce Hardin has been long recognized as a stalwart worker in the Arkansas Academy of Sciences. Although her tangible and intangible contributions are too numerous to enumerate, below are listed some of her notable activities within and for the Academy as well as to promote science education at her home University and throughout the state of Arkansas:

Dr. Hardin has worked with and mentored numerous students in research projects on a wide variety of topics focused on a broad diversity of organisms including algae, cyanobacteria, fungi, lichens, and vascular plants. True to form as a dedicated teacher, Joyce believes, “My major contribution to science during my career has been mentoring young scientists and fostering scientific literacy in those students who aren’t scientists. (I love teaching nonmajors biology.)”

Joyce won teaching awards at Central State University (now University of Central Oklahoma) and Hendrix College and was recognized by the Department of Crop, Soil, and Environmental Sciences (UAF) as their outstanding graduate for 2004 (An award given to exceptional alumni).

Joyce served as treasurer for AAS from 1997 to 2006 and president in 2009 (also filling other official roles that rotated up to president).

Dr. Hardin served as Chair (equivalent to Dean) of the Natural Science Area and Vice President for Student Affairs at Hendrix University, and was honored as the Judy and Randy Wilburn Odyssey Professor; a three year research professorship held with two other colleagues. She is currently Chair of the Environmental Studies Program, an area of investigation that is growing very rapidly at Hendrix.

Meeting Report

**FEATURED GUEST SPEAKER**

**The Space Use Ecology of Male Elk in Arkansas**

**Presented by**

**Dr. Don White Jr. Forest Resources (SFR) at the University of Arkansas-Monticello**



The traditional definition of habitat includes 4 basic components: food, cover, water, and space. The spatial arrangement of these components on the landscape relates closely to how ungulates such as elk (*Cervus elaphus*) distribute themselves. How well wildlife biologists and managers understand the behavior/habitat relationships of elk may determine how well they are able to maintain and improve the essential habitat elements necessary for elk survival. In this presentation, I will describe a progression of telemetry-based field studies several of my graduate students and I have conducted since 2003 in the Buffalo River watershed in north Arkansas that document male elk movements and habitat use. For male elk, landscapes are a mosaic of different re-sources

that are explained in well defined seasonal and daily cycles to meet metabolic and security needs. Both the juxtaposition and grain of habitat patches within a home range were strong determinants of movement patterns and overall habitat suitability. Habitat management for male elk in a predominately forested environment, such as that found in the Buffalo River watershed, should include maintenance of agricultural fields and forage openings on flat, low elevation sites such as valley bottoms.

Dr. Don White, Jr. is the James M. White Professor of Wildlife Ecology in the School of Forest Resources (SFR) at the University of Arkansas-Monticello.

Prior to joining the SFR in 2000, Dr. White was Assistant Professor of Biology at Drury University in Springfield, Missouri from 1998 to 2000. From 1996 to 1998, Dr. White was a Postdoctoral Fellow the University of Montana studying hantavirus in wild rodent populations in western Montana. Dr. White earned his Ph.D. in Wildlife Science from Montana State University-Bozeman, studying grizzly bears in Glacier National Park.

Dr. White is broadly interested in the biology, ecology, conservation, and management of vertebrates, particularly large mammals. His research is focused around science issues relevant to wildlife management needs. The overarching theme behind his research interests is developing scientific tools and knowledge to support sound natural resource management.

Dr. White and his graduate students conduct field research on a variety of wildlife species, including grizzly bears, black bears, elk, white-tailed deer, mountain goats, and small mammals in the western, midwestern, and southeastern U.S. Dr. White is a Certified Wildlife Biologist®.



Meeting Report

SECTION PROGRAMS  
ORAL PRESENTATIONS

**SESSION 1: FRIDAY 1:00-2:45.**  
**CHAIR: MOSTAFA HEMMATI**  
**C-18, SCIENCE CENTER**  
**Topics: Physics**

- 1:00**  
**CURRENT BEARING ELECTRON SHOCK WAVES**  
Childs, William; Hemmati, Mostafa. Arkansas Tech University
- 1:15**  
**NUMERICAL SOLUTION OF CURRENT BEARING BREAKDOWN WAVES**  
Waters, Dacen; Hemmati, Mostafa Hemmati. Arkansas Tech University
- 1:30**  
**A MODEL OF INTERACTING DARK ENERGY TO EXPLAIN THE HISTORY OF THE UNIVERSE**  
Shojaei, Hamed; Smylie, James; Houle, Chenoa. Arkansas Tech University
- 1:45**  
**ABUNDANCE COMPARISON OF NEUTRON CAPTURE ELEMENTS IN GALACTIC HALO STARS: KNOWN VS. UNKNOWN**  
Teffs, Jacob; Odekirk, Tristan; Burris, Debra L. University Of Central Arkansas
- 2:00**  
**DEFORMATION MECHANISMS IN ANISOTROPIC OPEN CELL ALUMINUM AND STAINLESS STEEL FOAMS**  
Playford, James D.; Stange, Samuel; Palaniappan, Rahul K.; Steuber, James G.; Swaminadham, Midturi; Post, Julian. University of Arkansas Little Rock and Arkansas Tech University
- 2:15**  
**THERMAL CONDUCTIVITY OF STAINLESS STEEL AND CELLULAR FOAMS**  
Playford, James; Kanthabhabha, Rahul; Pidugu, Srikanth B.; Midturi, Swaminadham. University of Arkansas at Little Rock
- 2:30**  
**IMPROVEMENT OF ELECTRODEPOSITED CADMIUM TELLURIDE FILM UNIFORMITY AND ADHERENCE BY PH, TEMPERATURE, AND MASS TRANSPORT CONTROL**  
Vangilder, Joshua A.; Engelken, Robert D.; Felizco, Frederick M.; Hall, John; McNew, David; Hill, Zachery. Arkansas State University

**SESSION 1: FRIDAY 1:00-2:45.**  
**CHAIR: CHARLES MEBI**  
**C-19, SCIENCE CENTER**  
**Topics: Chemistry**

- 1:00**  
**HYDROGENASE MODELS: DESIGNING THE ELECTRON TRANSPORT CHAIN**  
Rosenthal, Briteney; Karr, Derek; Ruixiao, Gao; Williams, Andrew; Mebi, Charles. Arkansas Tech University
- 1:15**  
**STYRENE AND ITS METABOLITES EXHIBIT POTENTIAL FOR MULTIPLE-SITE INTERACTION WITH CYP2E1**  
Hartman, Jessica H.; Boysen, Gunnar; Miller, Grover P. University of Arkansas for Medical Sciences. University of Arkansas at Little Rock
- 1:30**  
**SYNTHESIS AND PHOTOCHEMISTRY OF A WATER-SOLUBLE RUTHENIUM NITROSYL COMPLEX**  
Felton, Charlette M.; Poole, Francis; Mebi, Charles A. Arkansas Tech University

**1:45**  
**IMPROVEMENT IN PHOTOCONDUCTANCE OF CHEMICALLY DEPOSITED BISMUTH SULFIDE FILMS BY ANNEALING**  
Felizco, Frederick M.; Engelken, Robert D.; Vangilder, Joshua A.; Hall, John W.; Newell, Jason M.; Thapa, Shyamm. Arkansas State University

**2:00**  
**ELECTRODEPOSITION OF INDIUM SULFIDE FILMS FROM ORGANIC SOLUTIONS-PART II**  
Mughal, Maqsood Ali; Newell, Michael; Vangilder, Josh; Hall, Hall, John; Felizco, Frederick; Thapp, Shyam. Arkansas State University

**2:15**  
**ELECTRODEPOSITION OF INDIUM SULFIDE FILMS FROM ORGANIC SOLUTIONS-PART I**  
Hall, John; Engelken, Robert; Moghul, Maqsood; Vangilder, Josh; Newell, Jason; Felizco, Frederick. Arkansas State University

**SESSION 1: FRIDAY 1:00-2:45.**  
**CHAIR: FOREST PAYNE**  
**B-19, SCIENCE CENTER**  
**Topics: Environmental Science**

**1:00**  
**USING CHLOROPHYLL FLUORESCENCE TO COMPARE IRRADIANCE EFFECTS ON PHOTOSYSTEM II (PSII) PHOTOCHEMISTRY IN ADVANCED REPRODUCTION OF FIVE UPLAND HARDWOOD SPECIES**  
Cunningham, Kutcher K; Grace, Stephen C. University of Arkansas Division of Agriculture. University of Arkansas at Little Rock

**1:15**  
**ASSESSMENT OF THREE CREEKS IN THE UPPER WATERSHED OF THE STRAWBERRY RIVER, AR, FULTON CO, USA**  
Brueggen, Teresa R.; Bouldin, Jennifer L. Arkansas State University

**1:30**  
**ASSESSMENT AND CHARACTERIZATION OF WATER QUALITY AND BIOTIC ASSEMBLAGES OF THE TYRONZA RIVER, ARKANSAS**  
Wentz, N.J., Henderson, N.D.; Christian, A.D. Christian. Arkansas State University. Arkansas Department of Environmental Quality. University of Massachusetts, Boston

**1:45**  
**MOLECULAR GENETIC ANALYSIS OF MICROBIAL LIFE IN BLANCHARD SPRINGS CAVERNS, ARKANSAS**  
Gonzalez, Claudia P.; Shields, Jonathan M.; Story, Lauren M.; Engman, James A. Henderson State University

**2:00**  
**EVALUATING LOBLOLLY PINE MANAGEMENT SCENARIOS CONSIDERING CARBON MARKETS**  
Chaudhari, Umesh K.; Pelkki, Matthew H. University of Arkansas at Monticello

**SESSION 1: FRIDAY 1:00-2:45.**  
**CHAIR: PABLO BACON**  
**B-18, SCIENCE CENTER**  
**Topics: Invertebrate Zoology**

**1:00**  
**FIRE INFLUENCES ANT COMMUNITY STRUCTURE IN OZARK HARDWOOD FORESTS**  
Verble, Robin M. University of Arkansas at Little Rock

## Arkansas Academy of Science

**1:15**  
**THE INFLUENCE OF MISIDENTIFICATION ON SPECIES RICHNESS MEASURES FROM LAND SNAIL BIOINFORMATICS**  
 Nolan, Casey B.; Minton, Russel L. University of Louisiana at Monroe

**1:30**  
**STATUS SURVEY OF THE DIVERSITY AND DISTRIBUTION OF FRESHWATER GASTROPODS IN THE MISSISSIPPI ALLUVIAL PLAIN AND SOUTH CENTRAL PLAINS OF ARKANSAS**  
 Basiger, Erin L.; Minton, Russel L. University of Louisiana at Monroe

**1:45**  
**DISTRIBUTION AND LIFE HISTORY ASPECTS OF THE FRESHWATER SHRIMPS, MACROBRANCHIUM AND PALAEMONETES (DECAPODA: PALAEMONIDAE), IN ARKANSAS.**  
 Robison, Henry W.; McAllister, Chris T.; Harp, George L. Southern Arkansas University. Eastern Oklahoma State College, Idabel. Arkansas State University

**2:00**  
**OCCURRENCE OF TWO RARE PRAIRIE INSECTS, TETRALONIELLA ALBATA AND MICROSTYLUM MOROSUM, AT TERRE NOIRE NATURAL AREA, CLARK COUNTY, ARKANSAS**  
 Tumison, R.; Benjamin, K. Henderson State University

**2:15**  
**NOTES ON TARANTULA (*APHONOPELMA HENTZI*) REPRODUCTION IN THE OZARKS**  
 Jamieson, David H. Jamieson; Jones, Austin; Jamieson, Terry. NorthWest Arkansas Community College. Crowder College, Cassville

**SESSION 2: FRIDAY 3:00-4:45.**  
**CHAIR: CARL FREDRICKSON**  
**C-18, SCIENCE CENTER**  
**Topics: Physics**

**3:00**  
**DETERMINING THE TEMPERATURE DEPENDENT YOUNG'S MODULUS OF MONOLAYER AND BILAYER GRAPHENE SHEETS USING MOLECULAR DYNAMIC SIMULATION**  
 Downs, Roy; Scrivenner, Dakota; Terdalkar, Scabin S.; Rencis, Joseph J. University of Arkansas at Fayetteville

**3:15**  
**SURVEY OF THE CASE FOR THE ENVIRONMENTAL EFFICACY OF CADMIUM TELLURIDE SOLAR CELLS**  
 Newell, Jason M.; Egelken, Robert; Mughal, Maqsood; Thapa, Shyam; Vangilder, Joshua; Felizco, Frederick. Arkansas State University

**3:30**  
**COSMIC FLUX AND GAMMA RAYS ANALYSIS**  
 Ramesh, Nepal; Martin, Clayton; Hawron, Martin; Bachri, Abdel. Southern Arkansas University

**3:45**  
**BACKGROUND FROM LOW ENERGY NEUTRONS IN A HIGH PRESSURE XENON TIME PROJECTION CHAMBER FOR NEUTRINOLESS DOUBLE BETA DECAY**  
 Grant, Perry C.; Bachri, Abdel; Goldschmidt, Azriel. Southern Arkansas University. Lawrence Berkeley National Laboratory

**4:00**  
**( $\alpha, n$ ) INDUCED BACKGROUND RADIATION RATES IN NEUTRINOLESS DOUBLE BETA DECAY OF XENON-136**  
 Martin, Clayton B.; Bachri, Abdel; Goldschmidt, Azriel. Southern Arkansas University. Lawrence Berkeley National Laboratory

**4:15**  
**GAMMA RADIATION BACKGROUND RATES FOR NEUTRINOLESS DOUBLE BETA DECAY IN Xe-136**  
 Hawron, Martin; Bachri, Abdel; Goldschmidt, Azriel. Southern Arkansas University. Lawrence Berkeley National Laboratory

**4:30**  
**DIELECTRIC RELAXATION OF MACRO-CRYSTALLINE ROCHELLE SALT CRYSTALS IN A VISCOUS MEDIUM**  
 O'Toole, S.; Alpuerto, L.; Jones, T.; Todd, A.; Pancheco, N.; Hutton, S.L. Lyon College

**SESSION 2: FRIDAY 3:00-4:45.**  
**CHAIR: HASIM ALI**  
**C-19, SCIENCE CENTER**  
**Topics: Chemistry**

**3:00**  
**OPTIMIZATION AND CHARACTERIZATION OF BINDERS, ENCAPSULANTS, AND DENSIFICATION FOR BIOFUEL PELLETS**  
 Thapa, Shyam; Engelken, Robert; Newell, M.J.; Mughal, M.A.; Felizco, F.; Vangilder, J. Arkansas State University

**3:15**  
**FABRICATION AND CHARACTERIZATION OF GRAPHENE/SILICON SCHOTTKY DIODE**  
 Mohammed, Mohammed; Abdulrazzaq, Omar; Biris, Alexandru; Abdulalmohsin, Samir; Al-Hilo, Alaa; Zeid, Nima. University of Arkansas Little Rock

**3:30**  
**RAMAN SPECTROSCOPY AND PHOTOELECTROACTIVITY OF TITANIA NANOTUBULAR CATALYSTS**  
 Harcastle, Franklin D.; Sharma, Rajesh; Ishihara, Hidetaka; Biris, Alexandru S. Arkansas Tech University. Arkansas State University. University of Arkansas at Little Rock

**SESSION 2: FRIDAY 3:00-4:45.**  
**CHAIR: GROVER MILLER**  
**B-19, SCIENCE CENTER**  
**Topics: Medical Sciences**

**3:00**  
**NOVEL DUAL-PHASE ULTRA PERFORMANCE LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY ASSAY FOR PROFILING ENANTIOMERIC HYDROXYWARFARINS AND WARFARIN IN HUMAN PLASMA**  
 Jones, Drew R.; Boysen, Gunnar; Miller, Grover P. University of Arkansas for Medical Sciences

**3:15**  
**EXPANDING WARFARIN METABOLITE ANALYSES TO GLUCURONIDES IN PATIENT PLASMA**  
 Kang, Ji-Yeon; Jones, Drew R.; Yun, Chul-Ho; Boysen, Gunnar, Miller, Grover P. Chonnam National University. University of Arkansas for Medical Sciences

**3:30**  
**ANALYSIS OF HUMAN TACC3 IN CELLULAR RESPONSES TO POLYCYCLIC AROMATIC HYDROCARBONS**  
 Still, Ivan H.; Lauffart, Brenda. Arkansas Tech University

**3:45**  
**MALARIA, INTESTINAL PARASITIC INFECTION, ANEMIA, AND MALNOURISHMENT IN RURAL CAMEROONIAN VILLAGES WITH A PRELIMINARY ASSESSMENT OF EFFICACY OF INTERVENTIONS**  
 Richardson, Dennis J.; Richardson, Katherine R.; Richardson, Kristen E.; Gross, Jeanette; Tsekeng, Pierre; Dondji, Blaise. Quinnipiac University

## Meeting Report

### SESSION 2: FRIDAY 3:00-4:45.

CHAIR: LYNNE THOMPSON  
B-18, SCIENCE CENTER

Topics: Invertebrate, Vertebrate Zoology

3:00

#### TARDIGRADES OF THE UNIVERSITY OF CENTRAL ARKANSAS CAMPUS

Land, M.; Musto, A.; Miller, W.R.; Starkey, D.E.; Miller, J.D. University of Central Arkansas. Baker University

3:15

#### ARKANSAS "BUG" UPDATE 2011 INCLUDING 22 NEW STATE RECORDS

Chordas III, Steve W.; Tumilson, Renn; Robison, Henry W.; Kremers, Joe. Ohio State University

3:30

#### THE EFFICACY OF THERMAL IMAGING TECHNOLOGY FOR DOCUMENTING AMERICAN WOODCOCK ON PINE CLEARCUTS

Long, Andrea; Felix-Locher, Alexandra. University of Arkansas at Monticello

3:45

#### PREDICTING SEASONAL OCCURRENCE OF MALE ELK IN ARKANSAS

Wolf, Christine E.; White Jr., Don; Felix-Locher, Alexandra; Watt, Christopher L. University of Arkansas at Monticello

4:00

#### FLOODING EFFECTS ON THE SPACE USE OF WHITE-TAILED DEER WITHIN THE MISSISSIPPI ALLUVIAL FLOOD PLAIN

Graves, David; White Jr., Don, Jr.; Felix-Locher, Alexandra; Weih, Robert C. University of Arkansas at Monticello

### SESSION 3: SATURDAY 8:30-10:30.

CHAIR: MARC SEIGER  
C-18, SCIENCE CENTER

Topics: Physics

8:30

#### A NEW METHOD FOR DETERMINING RESONANCE LOCATIONS IN SPIRAL GALAXIES

Seigar, March S.; Sierra, Amber D.; Treuthardt, Patrick M.; Peurari, Ivanio. University of Arkansas at Little Rock. Instituto Nacional de Astrofisica

8:45

#### ACCRETION DISK SIZE IN UU AQUARI

Robertson, Jeff W. Arkansas Tech University

9:00

#### MODELING OF MICROMIXERS FOR LAB ON A CHIP APPLICATIONS

Bedinghaus, Andrew; Pidugu, Srikanth B. University of Arkansas at Little Rock

9:15

#### SIMULATION OF POWDER X-RAY DIFFRACTION USING A POLYCRYSTALLINE FILM OF SPHERICAL COLLOIDS

Smith, Jacob C.; Tacket, Ronald J. Arkansas Tech University

### SESSION 3: SATURDAY 8:30-10:30.

CHAIR: MARVIN FAWLEY  
B-19, SCIENCE CENTER

Topics: Botany, Microbiology

8:30

#### EVOLUTIONARY RELATIONSHIPS OF THE 'SKY ISLAND' PINES BASED ON NUCLEAR, CHLOROPLAST, AND MITOCHONDRIAL DATA

Segear, Nicole A. Hendrix College

8:45

#### DIFFERENT ABOVEGROUND LIVE BIOMASS MODELS YIELD INCREASINGLY DISPARATE ESTIMATES AS TREE DIAMETER INCREASES

Bragg, Don C. USDA Forest Service Southern Research Station

9:00

#### RIBOSOMAL RNA SPACER SEQUENCES AS A TOOL TO IDENTIFY CAREX SPECIES (SEDGES)

Fawley, Marvin W.; Fawley, Karen P. University of Arkansas at Monticello

9:15

#### NEPTUNIA OLERACEA LOUR. (FABACEA) NEW TO THE CONTINENTAL UNITED STATES, WITH NEW AND NOTEWORTHY RECORDS OF SEVERAL ANGIOSPERMS IN ARKANSAS

Palmer, Jeremy; Serviss, Brett; Peck, Jim. Henderson State University. University of Arkansas at Little Rock.

9:30

#### ESTIMATING THE SPECIES TREE FOR HAWAIIAN SCHIEDEA (CARYOPHYLLACEAE) FROM MULTIPLE LOCI IN THE PRESENCE OF RETICULATE EVOLUTION

Willyard, Ann; Wallace, Lisa E.; Wagner, Warren L.; Weller, Stephen G.; Saki, Ann K.; Nepokroeff, Molly. Hendrix College

9:45

#### PHYLOGENY OF FRESHWATER EUSTIGMATOPHYCEAE

Fawley, K.P.; Fawley, M.W.; Eliáš, M.; Nemjová, K.; Probst, N. University of Arkansas at Monticello. Charles University in Prague

10:00

#### ULTRASTRUCTURAL CHANGES IN A NEW ISOLATE TERPINOPHILIC ARTHROBACTER WHEN GROWING IN EITHER CIS-TERPIN, GLUCOSE, OR ALPHA TERPINEOL AS SOLE CARBON AND ENERGY SOURCE

Mwasi, Lawrence M. University of Arkansas at Pine Bluff

### SESSION 3: SATURDAY 8:30-10:30.

CHAIR: JOHN HUNT  
B-18, SCIENCE CENTER

Topics: Vertebrate Zoology

8:30

#### NEW RECORDS AND NOTES ON THE NATURAL HISTORY OF VERTEBRATES FROM ARKANSAS

Connior, M.B. Connior; Tumilson, R.; Robison, H.W. Robison. South Arkansas Community College. Henderson State University. Southern Arkansas University

8:45

#### ADDITIONAL INSECT SAMPLING IN THE BURROWS OF BAIRD'S POCKET GOPHER IN ARKANSAS

Kovarik, Peter W.; Connior, Matthew B.; Chordas III, Stephen W.; Skelly, Paul E.; Robison, Henry W. Columbus State Community College. South Arkansas Community College. The Ohio State University. Florida State Collection of Arthropods. Southern Arkansas University

9:00

#### DISTRIBUTION OF SHREWS IN ARKANSAS WITH SPECIAL EMPHASIS ON BLARINA BREVICAUDA OCCURRING IN THE STATE

Pfau, RS; Sasse, DB; Connior, MB; Guether, IF. Tarleton State University. Arkansas Game and Fish Commission. South Arkansas Community College. Arkansas Tech University

9:15

#### STATUS OF LITTLE BROWN BATS (MYOTIS LUCIFUGUS) IN ARKANSAS

Sasse, D. Blake. Arkansas Game and Fish Commission

## Arkansas Academy of Science

- 9:30**  
**WINTER/SPRING PRECIPITATION IN NORTHERN ARKANSAS AND RAPID RESERVOIR INUNDATION: HISTORIC CASE OF THE EASTERN COLLARED LIZARD, *CROTAPHYTUS COLLARIS***  
 Trauth, Stanley E. Arkansas State University
- 9:45**  
***CARYOSPORA DUSZYNSKII* (APICOMPLEXA: EIMERIIDAE) FROM THE SPECKLED KINGSSNAKE, *LAMPROPELTIS HOLBROOKI* (REPTILIA: OPHIDIA), IN ARKANSAS: A NEW HOST RECORD WITH A SUMMARY OF PREVIOUS RECORDS**  
 McAllister, Chris T.; Robison, Henry W.; Seville, R. Scott; Roehrs, Zachary. Eastern Oklahoma State College, Idabel. Southern Arkansas University. University of Wyoming/Casper Center
- 10:00**  
**THE FISHES OF CROOKED CREEK (WHITE RIVER DRAINAGE) IN NORTHCENTRAL ARKANSAS, WITH NEW RECORDS AND A LIST OF SPECIES**  
 Robison, Henry W.; McAllister, Chris T.; Shirley, Ken Shirley. Southern Arkansas University. Eastern Oklahoma State College. Arkansas Game & Fish Commission
- 10:15**  
**SUMMARY OF PREVIOUS AND NEW RECORDS OF THE ARKANSAS DARTER (*ETHEOSTOMA CRAGINI*) IN ARKANSAS**  
 Wagner, Brian K.; Kottmyer, Mark D.; Slay, Michael E. Arkansas Game and Fish Commission. The Nature Conservancy
- POSTER PRESENTATION**
- BIOLOGY POSTERS**
- 1. THE USE OF MICROBIAL EXOPOLYSACCHARIDES TO AID IN THE REDUCTION OF SOIL EROSION**  
 Jamison, Janet; Gilmore, David. Arkansas State University
  - 2. PHYSIOLOGICAL EVALUATION OF *GLADIOLUS* GENOTYPES FOR FLOWER PRODUCTION IN THE SOUTHEAST ARKANSAS**  
 Anderson, Lurie Lee; Islam, Shahidul. University of Arkansas at Pine Bluff
  - 3. WATER AND SEDIMENT QUALITY ASSESSMENT OF COTTON PRODUCTION**  
 Carter, Tiffany; Yu, Peng; Teague, Tina G.; Bouldin, Jennifer. Arkansas State University
  - 4. EVALUATION OF ANTIOXIDANT CAPACITY OF SWEETPOTATO LEAVES, FISH DIETS, AND FISH SAMPLES**  
 Everette, Jace D.; Adam, Zelalem; Islam, Shahidul. University of Arkansas at Pine Bluff
  - 5. DIVERSITY OF FRESHWATER EUSTIGMATOPHYCEAE**  
 Probst, Nathan; Fawley, Marvin W.; Fawley, Karen P. University of Arkansas at Monticello
  - 6. ANTIBIOTIC RESISTANCE OF *STAPHYLOCOCCI* OBTAINED FROM PET INDUSTRY EMPLOYEES**  
 Gilmore, David F.; Fu, Xing. Arkansas State University
  - 7. INFLUENCE OF STAND QUALITY MANAGEMENT ON MAST QUANTITY AND QUALITY IN *QUERCUS PAGODA* RAF**  
 Hawkins, Tracy S.; Meadows, James S. USDA Forest Service
  - 8. SIMPLE SCIENCE: INITIATION OF BASELINE DATA SETS**  
 Jennier, Jo-Ann C. Ouachita Mountains Biological Station
  - 9. SEARCHING FOR HARVESTER ANTS (*POGONOMYRMEX*) IN ARKANSAS**  
 Thompson, Lynne C.; General, David M. University of Arkansas at Monticello
  - 10. NEW DISTRIBUTIONAL RECORDS OF ANTS IN ARKANSAS FOR 2009 AND 2010 WITH COMMENTS ON PREVIOUS RECORDS**  
 General, David M.; Thomson, Lynne C. University of Arkansas at Monticello
  - 11. PRELIMINARY GENE FLOW ESTIMATES OVER SMALL DISTANCES IN THE PYRAMID ELIMIA, *ELIMIA POTOSIENSIS*, FROM ARKANSAS**  
 Paight, Chris J.; Minton, Russell L. University of Louisiana at Monroe
  - 12. A QUANTITATIVE COMPARISON OF AN URBAN STREAM TO LEAST-DISTURBED REFERENCE STREAMS**  
 Powers, Zachary A.; Duckett, Brian; Shaver, Richard R. University of Arkansas at Little Rock
  - 13. FORAGING BEHAVIOR OF THREE SYMPATRIC AND CONGENERIC TYRANNIDS (*TYRANNUS* SPP.) IN WESTERN ARKANSAS**  
 Kannan, Ragupathy; James, Douglas A. University of Arkansas at Fort Smith
  - 14. EFFECTS OF *DROSOPHILA P70S6* KINASE VARIANTS ON CELL SIZE**  
 Stewart, Mary J.; Hunt, John. University of Arkansas at Monticello
  - 15. INVESTIGATION OF TWO GENES IN GROWTH AND TUMOR SUPPRESSION**  
 Rose, Robert Rose; Stewart, Mary J. University of Arkansas at Monticello
  - 16. WASTE WATER EFFLUENT EFFECTS ON VIABILITY OF SAGER CREEK**  
 Constantin, Rebekah; Lane, Anna; Meinzer, Jake; Slagter, Christa; Wakefield, Timothy S. John Brown University
  - 17. AN EFFICIENT FLOOD BASIN WATER DEPTH SENSOR**  
 Bland, Petey; Slaton, William. University of Central Arkansas
  - 18. BALLOONSAT AND HOBOWARE**  
 White, Jonathan R.; Slaton, William V. University of Central Arkansas
  - 19. THE BROADMOOR LAKE PROJECT**  
 Freeman, Nicole D.; Cornwell, Andrew; Somers, M.; Combs, Melanie. University of Arkansas at Little Rock
  - 20. SLOPE MATTERS: CAN SLOPE MEASUREMENT BY INDIVIDUALS BE OBJECTIVE?**  
 Hastings, Cara; Harris, Ron; Weih Jr., Robert C.; Liechty, Hal O. University of Arkansas at Monticello
- CHEMISTRY AND PHYSICS POSTERS**
- 1. RAPID QUANTITATIVE METHOD FOR SALICIN FROM A WILLOW TREE BY UTILIZING AN ATTENUATED TOTAL REFLECTANCE (ATR) FOURIER TRANSFORM INFRARED (FT-IR) SPECTROMETER**  
 Laster, Fanchon P.; Anderson II, Terry L.; Hahn Frank. Philander Smith College
  - 2. SYNTHESIS AND CHARACTERIZATION OF PYRAZOLYL METHANE NICKEL CYANIDE COMPLEX**  
 Lyubartseva, Ganna; Parkin, Sean. Southern Arkansas University. University of Kentucky
  - 3. SYNTHESIS AND CHARACTERIZATION OF RUTHENIUM MONOMER AND DIMER COMPLEXES**  
 Bhuiyan, Anwar A.; Kudo, Shotaro. Arkansas Tech University
  - 4. PHOTOINDUCED EXTRUSION OF NITRIC OXIDE FROM A RUTHENIUM NITROSYL COMPLEX**  
 Poole, Francis; Felton, Charlette M.; Mebi, Charles A. Arkansas Tech University

## Meeting Report

**5. DETERMINATION OF ELASTIC MODULI IN BRASS, ALUMINUM, WOOD, AND PLASTIC RODS USING RESONANCE**

French III, Roy T.; Slaton, William V. University of Central Arkansas

**6. EFFECTS OF ANNEALING ON THE ELECTRONIC TRANSITIONS OF ZNS THIN FILMS**

Jabbar, Wasmaa; Habubi, Nadir Fadhil; Chiad, Sami Salman.

**7. WAVE EXPERIMENTS USING LOW-COST 24.5 KHZ ULTRASONIC TRANSDUCERS**

Davis, Mary C.; Slaton, William V. University of Central Arkansas

**8. DETERMINING NEUTRON FLUX OF A PLUTONIUM-BERYLLIUM SOURCE USING NEUTRON ACTIVATION OF INDIUM**

Watson, Kristopher; Fenske, Jacob D.; Xu, Shuang; Frederickson, Carl F.; Addison, Stephen R.; Mehta, Rahul. University of Central Arkansas

**9. ANGULAR CORRELATION OF TWO 511 KEV GAMMA-RAYS FROM SODIUM-22**

Tubbs, Matthew; Patel, Niravkumar D.; Lu, Vinh; Frederickson, Carl F.; Addison, Stephen R.; Mehta, Rahul. University of Central Arkansas

**10. COSMIC FLUX AND GAMMA RAYS ANALYSIS**

Ramesh, Nepal; Martin, Clayton; Hawron, Martin; Bachri, Abdel. Southern Arkansas University

**11. BACKGROUND FROM LOW ENERGY NEUTRONS IN A HIGH PRESSURE XENON TIME PROJECTION CHAMBER FOR NEUTRINOLESS DOUBLE BETA DECAY**

Grant, Perry C.; Bachri, Abdel Bachri; Goldschmidt, Azriel. Southern Arkansas University. Lawrence Berkeley National Laboratory

**12. ( $\alpha, n$ ) INDUCED BACKGROUND RADIATION RATES IN NEUTRINOLESS DOUBLE BETA DECAY OF XENON-136**

Martin, Clayton B.; Bachri, Abdel Bachri; Goldschmidt, Azriel. Southern Arkansas University. Lawrence Berkeley National Laboratory

**13. GAMMA RADIATION BACKGROUND RATES FOR NEUTRINOLESS DOUBLE BETA DECAY IN Xe-136**

Hawron, Martin Bachri, Abdel Bachri; Goldschmidt, Azriel. Southern Arkansas University. Lawrence Berkeley National Laboratory

**14. CONDITIONS IN THE UPPER TROPOSPHERE AND THEIR RELATION TO CLIMATE CHANGE**

Goins, Adam; Kennon, Tillman; Ali, Hashim. Arkansas State University

**15. VIRTUAL NANO-INDENTATION OF STONE-WALES DEFECT MIGRATION IN GRAPHENE SHEETS AT CONSTANT TEMPERATURE**

Downs, Roy; Scrivener, Dakota; Terdalker, Sadchin S.; Rencis, Joseph J. University of Arkansas