84th Annual Meeting, 2000. Program

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PROGRAM
Arkansas Academy of Science
84th Annual Meeting
April 7-8, 2000
Hot Springs, Arkansas

SCHEDULE OF EVENTS

Friday, April 7, 2000
9:00 am - 4:00 p.m. Registration Lobby
8:30 a.m. - 10:00 a.m. Executive Committee Meeting Board Room
10:30 a.m. - 11:30 a.m. First Business Meeting Board Room
11:30 a.m. - 12:45 p.m. Lunch (See dining info)
1:00 p.m. - 1:45 p.m. Welcome and Introductions Board Room
2:00 p.m. - 5:00 p.m. Paper Sessions
Vertebrate Zoo Room 2307
Invertebrate Zoo Room 2308/09
Biomedical, Biochemistry Room 2301
Microbiology, Immunology Room 2401
Physics I Room 2402
2:00 p.m. - 5:00 p.m. Poster Session Room 2303
3:00 p.m. - 4:00 p.m. Break - Refreshments Third Floor
5:30 p.m. - 7:00 p.m. Hospitality Gathering Downtowner Hotel - Crown Room
Saturday, April 8, 2000
8:00 a.m. - 10:00 a.m. Registration Lobby
9:00 a.m. - 11:45 a.m. Paper Sessions
Vertebrate Zoo II Room 2307
Botany/Environmental Chemistry II Room 2401
Physics II Room 2402
9:00 a.m. - 11:00 a.m. Poster Session Room 2303
10:00 a.m. - 10:30 a.m. Break - Refreshments Third Floor
12:00 noon Second Business Meeting Board Room
Slide Preview Room Board Room - after 2:00 p.m. Friday
1:00 p.m. - 1:45 p.m. Welcome and Introductions Board Room
2:00 p.m. - 5:00 p.m. Poster Session Room 2303
3:00 p.m. - 4:00 p.m. Break - Refreshments Third Floor
5:30 p.m. - 7:00 p.m. Hospitality Gathering Downtowner Hotel - Crown Room

SECTION PROGRAMS
* Undergraduate **Graduate

POSTER SESSION
Friday, April 7, 2000
Location: Room 2303, Third Floor

Time Topic
Sam Cron and Gary L. Emmert, Program of Environmental Science and Department of Chemistry, Arkansas State University. COMPARING STANDARD AND NEW REAGENTS FOR MEASURING OZONE CONCENTRATIONS IN DRINKING WATER
Andy Thornton and William Burns, Arkansas State University. COMPUTATIONAL CHEMISTRY: USING GAUSSIAN 98W

Malcolm L. McCallum and Stanley E. Trauth, Arkansas State University. THE ARKANSAS AMPHIBIAN MONITORING PROGRAM (AAMP) IN ARKANSAS: A PROJECT IN ITS INFANCY AND IN NEED OF VOLUNTEERS
Dru S. Dace and Thomas M. Walker, University of Central Arkansas. A NOVEL MOUSE MODEL FOR MEASURING MACROPHAGE CYTOTOXIC ACTIVITY DURING PACITAXEL-BASED CHEMOTHERAPY

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Published by Arkansas Academy of Science, 2000
Richard D. Smith and Richard C. Kurten, University of Arkansas for Medical Sciences. CO-LOCALIZATION OF SORTING NEXIN-I WITH RAB USING IMMUNOFLUORESCENCE MICROSCOPY

2:15* Mike Buck, R. Engellen, C. Chastain, and J. Meyer, Arkansas State University. UNCONVENTIONAL MEDIA OR EXTREME CONDITIONS FOR ELECTROPLATING DIFFICULT-TO-PLATE METALS

2:30* D. W. Bullock, Z. Ding, C. Emery, M. Filipkowski, V. P. LaBella, M. Mortazavi, G. Salamo, and P. M. Thibado, University of Arkansas at Fayetteville and University of Arkansas at Pine Bluff. ELECTRON SPIN SCATTERING ACROSS A P-TYPE GAAS (110) STEP USING A FERROMAGNETIC-METAL STM TIP

PAPER SESSION

Friday, April 7, 2000

CHEMISTRY I

Location: Room 2401, Fourth Floor

Chairperson: Walter E. Godwin, University of Arkansas at Monticello

Time Topic
2:00* Martha Baskett, Rose McConnell, and Walter Godwin, University of Arkansas at Monticello. PYRROLE-FURAN CO-POLYMERS: A MOLECULAR MODELING STUDY

2:15* Amy Morena, Rose McConnell, and Walter Godwin, University of Arkansas at Monticello. THIOPHENE-FURAN CO-POLYMERS: A MOLECULAR MODELING STUDY

2:30* Jestin Thomas and Victor Blunt, University of Arkansas at Pine Bluff. SYNTHESIS AND CHARACTERIZATION OF NICKEL (II) AND IRON (III) IN ADAMANTANECARBOXYLATE

2:45* Amber Sawyer and Edmond Wilson, Jr., Harding University. KINETIC RATE CONSTANTS AND TEMPERATURE DEPENDENCIES FOR THE REACTIONS OF CYCLOPROPANE AND CHF3OCHF2(HFOC-134) WITH HYDROXYL RADICALS

3:00 Break - Refreshments - Third Floor Lobby

3:00 Break - Refreshments - Third Floor Lobby

PHYSICS I

Location: Room 2402, Fourth Floor

Chairperson: Will Braithwaite, University of Arkansas at Little Rock

Time Topic
4:00* Christine A. Byrd, Jeff L. Shaw, Dawn M. Wolford, W. J. Braithwaite, and Edwin S. Braithwaite, University of Arkansas at Little Rock, and Cedarville College, Cedarville, Ohio. TESTING ACCEPTANCE/EFFICIENCY OF STAR'S MAIN TPC WITH REALISTIC DATA

4:15* Justin Meyer, R. Engelken, M. Buck, and C. Chastain, Arkansas State University. ENHANCEMENT OF METAL SULFIDE FILMS CHEMICALLY DEPOSITED FROM THIOACETIC ACID BATHS THROUGH SUBSTRATE PROCESSING

4:30** Steve Nicoletti and Al Adams, University of Arkansas at Little Rock. OPTICAL TRANSMITTANCE OF RICE LEAVES

VERTEBRATE ZOOLOGY I

Location: Room 2307, Third Floor

Chairperson: David Jammes, Arkansas State University at Newport

Time Topic
2:00** Mitch Wine, Steve Blumenhine, and George Harp, Arkansas State University. CURRENT POPULATION DENSITY OF THE YELLOWCHEEK DARTER

2:15* Daniel Brown and Steven Beaupre, Hendrix College, and University of Arkansas at Fayetteville. MAPPING KERNEL HOME RANGE ESTIMATES OF THE TIMBER RATTLER

2:30 Tommy Finley, Renn Tumlison, and John Hardee, Henderson State University. PRELIMINARY STUDY OF THE INCIDENCE OF LEAD IN MOURNING DOVES IN ARKANSAS

2:45** Stanley E. Trauth and Malcolm L. McCulham, Arkansas State University. CURLY-TAIL MALFORMATION IN HATCHLINGS OF THE ALLIGATOR SNAPPPING TURTLE, MACROCHREYS TEMMINICKII (TESTUDINES: CHELYDRIIDAE), FROM NORTHEASTERN ARKANSAS

3:00 Break - Refreshments - Third Floor Lobby

2:00* Mostafa Hemmati and Rory Andrew Roberts, Arkansas Tech University. WAVE PROFILE FOR ANTIFORCE CLASS II WAVES

3:00 Break - Refreshments - Third Floor Lobby

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VERTEBRATE ZOOLOGY I
Location: Room 2307, Third Floor
Chairperson: Allen Carter, Arkansas Game and Fish Commission

<table>
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<tr>
<th>Time</th>
<th>Topic</th>
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<tbody>
<tr>
<td>4:00</td>
<td>Stanley E. Trauth, Arkansas State University. WINTER BREEDING AS A COMMON OCCURRENCE IN THE RINGED SALAMANDER, AMBYSTOMA ANNULATUM (CAUDATA: AMBYSTOMATIDAE), IN THE OZARK NATIONAL FOREST OF NORTHCENTRAL ARKANSAS</td>
</tr>
<tr>
<td>4:15</td>
<td>Thomas M. Buchanan, Jerry Smith, Diana Saul, Jeff Harwick, Tim Burnley, Mark Oliver, and Ken Shirley, Westark College, and Fisheries Division, Arkansas Game and Fish Commission. NEW ARKANSAS RECORDS FOR TWO NONINDIGENOUS FISH SPECIES, WITH A SUMMARY OF PREVIOUS RECORDS OF NONNATIVE FISHES FROM ARKANSAS</td>
</tr>
<tr>
<td>4:30</td>
<td>Leo Carson Davis, John Scoggins, and J. Alan Holman, Southern Arkansas University, Fouke High School, and Michigan State University. LARGE PLEISTOCENE BOX TURTLE FROM SOUTHWEST ARKANSAS</td>
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INVERTEBRATE ZOOLOGY
Location: Room 2309/2309, Third Floor
Chairperson: John Harris, Arkansas Highway and Transportation Department

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<tr>
<td>2:00**</td>
<td>Camille Flanders and Dan Magoulis, University of Central Arkansas. SCALE DEPENDENT SPECIES ASSOCIATION OF LOTIC SYSTEM CRAYFISH IN THE SALEM PLATEAU REGION OF NORTHERN ARKANSAS AND SOUTHERN MISSOURI</td>
</tr>
<tr>
<td>2:15</td>
<td>Henry W. Robison and John R. Holsinger, Southern Arkansas University, and Old Dominion University, Norfolk, Virginia. FIRST RECORD OF THE SUBTERRANEAN AMPHIPOD CRUSTACEAN, ALLOCRANGONYX HUBRICHII (ALLOCRANGONYCTIDAE), IN ARKANSAS</td>
</tr>
<tr>
<td>2:30</td>
<td>Jim Edson, University of Arkansas at Monticello. MONARCH BUTTERFLIES IN ARKANSAS</td>
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<tr>
<td>2:45*</td>
<td>Karen Arbuckle, Southern Arkansas University. HYPOTHETICAL ORIGINS OF PALEOZOIC FOSSILS FROM THE GULF COASTAL PLAIN</td>
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3:00 Break - Refreshments - Third Floor Lobby

INVERTEBRATE ZOOLOGY
Location: Room 2309/2309, Third Floor
Chairperson: George Harp, Arkansas State University

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<tr>
<td>4:00</td>
<td>George L. Harp and Phoebe A. Harp, Arkansas State University. OCCURRENCE OF OPHELIDOMPHUS WESTFALLI (GOMPHIDAE: ODONATA) IN MISSOURI</td>
</tr>
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</table>

4:15 Alan D. Christian, Chris L. Davidson, William R. Posey, Peter J. Rust, Jerry L. Farris, John L. Harris, and George L. Harp, Arkansas State University. GROWTH CURVES OF FOUR SPECIES OF COMMERCIALLY VALUABLE FRESHWATER MUSSELS (BIVALVIA: UNIONIDAE) IN ARKANSAS

BIOMEDICAL
Location: Room 2301, Third Floor
Chairperson: Anne Grippo, Arkansas State University

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<tr>
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<tr>
<td>2:00**</td>
<td>W. D. Bryant, W. Humphrey, and A. Grippo, Arkansas State University. THE EFFECTS OF ESTROGENIC AGENTS ON RAM SPERM ACROSOME REACTION</td>
</tr>
<tr>
<td>2:15**</td>
<td>D. DelLyn Holleman and Steven W. Runge, University of Central Arkansas. A COMPARISON OF APOTOTIC INDUCTION IN THE GUT OF APLYSIA CALIFORNICA AND THE SPRAGUE DAWLEY RAT</td>
</tr>
<tr>
<td>2:30*</td>
<td>David Gilmore, Barbara Murphy, April Stewart, Amanda Smith, and Holly Harrell, Arkansas State University. CONVERSION OF GRAY WATER TO BACTERIAL PLASDIC</td>
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<tr>
<td>2:45**</td>
<td>R. L. Jordan and W. L. Gray, University of Arkansas for Medical Sciences. CHANNEL CATFISH HERPESVIRUS GENE EXPRESSION IN INFECTED FISH</td>
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3:00 Break - Refreshments - Third Floor Lobby

BIOMEDICAL
Location: Room 2301, Third Floor
Chairperson: David Gilmore, Arkansas State University

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<tr>
<td>4:00</td>
<td>H. B. Starnes, M. W. White, R. Mahalingam, and W. L. Gray, University of Arkansas for Medical Sciences. THE COMPLETE SEQUENCE OF THE SIMIAN VARICELLA VIRUS GENOME AND COMPARATIVE ANALYSIS WITH THE VARICELLA ZOSTER VIRUS</td>
</tr>
<tr>
<td>4:15</td>
<td>Lisa Mullis and Wayne L. Gray, University of Arkansas for Medical Sciences. CHARACTERIZATION OF THE SIMIAN VARICELLA VIRUS GLYCOPROTEIN E</td>
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PAPER SESSION
Saturday, April 8, 2000
CHEMISTRY II
Location: Room 2401, Fourth Floor
Chairperson: Frank Setliff, University of Arkansas at Little Rock

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<th>Time</th>
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<tr>
<td>9:30*</td>
<td>Melissa Arnold, David Bailey, and Michael J. Panigot, Arkansas State University. SELECTIVE FUNCTIONALIZATION OF THE 6-HYDROXYL GROUP OF METHYL ALPHA-D-GLUCOPYRANOSIDE: APPLICATION TO THE PREPARATION OF C-GLYCOSIDE BASED DENDRIMERS</td>
</tr>
</tbody>
</table>
| 9:15* | Amy Bailey and Michael J. Panigot, Arkansas State University. PREPARATION OF A GALACTOSE-
DERIVED LACTONE AND CONVERSION TO AN ALKYNYL C-GALACTOSIDE FOR USE IN THE PREPARATION OF C-GLYCOSIDE CONTAINING DENDRIMERs

9:30** Layla Bland and Michael J. Panigot, Arkansas State University. REACTION OF ALPINE-BORANE WITH ALDEHYDES: REACTIVITY RATE ASSESSMENT BY OBSERVATION OF THE DISAPPEARANCE OF THE CARBONYL n - π PEAK BY UV - VISIBLE SPECTROMETRY

9:45* Jason Boga, Mariah McMasters, and Michael J. Panigot, Arkansas State University. PREPARATION OF AN ELECTROPHILIC 3-METHYLINDOLE DERIVATIVE: DIFFICULTIES IN FORMING A STABLE, SUITABLE MATERIAL FOR THE PREPARATION OF TRYPTOPHAN

10:00 Break - Refreshments - Third Floor Lobby

CHEMISTRY II
Location: Room 2401, Fourth Floor

Chairperson: Michael J. Panigot, Arkansas State University

Time Topic
10:30 Frank L. Setliff and Tyson K. Sprudlin, University of Arkansas at Little Rock. HAMMETT CORRELATIONS OF THE SULFONAMIDE PROTON CHEMICAL SHIFT IN A SERIES OF N-(SUBSTITUTED ARYL)-p-TOLUENESULFONAMIDES

10:45* Frank L. Setliff and Melody K. Harrison, University of Arkansas at Little Rock. HAMMETT CORRELATIONS OF THE AMIDE PROTON CHEMICAL SHIFTS IN A SERIES OF 1-TOSYL-3-(4-SUBSTITUTED PHENYL)UREAS

11:00 Robert E. Maruca, Rodney Rowland, and Justin Charton, Arkansas Tech University. SYNTHESIS OF SOLID MATRIX BOUND METAL ION COMPLEXING AGENTS

11:15 Alan Ford, Pam Ramage, and Scott Reeve, Arkansas State University. INFRARED DIODE LASER SPECTROSCOPY OF JET COOLED IRON PENTACARBONYL

PHYSICS II
Location: Room 2402, Fourth Floor

Chairperson: Mostafa Hemmati, Arkansas Tech University

Time Topic
9:00* Ann Wright, Larry Dunn, Brian Alford, and Justin Patton, Hendrix College. A STUDY OF THE AMPLITUDE OF PRESSURE AND THRUST OSCILLATIONS IN A LAB-SCALE HYBRID ROCKET

9:15 Christine A. Byrd, Jeff L. Shaw, M. Wofford, W. J. Braithwaite, and Edwin S. Braithwaite, University of Arkansas at Little Rock, and Cedarville College, Cedarville, Ohio. USING REALISTIC DATA FOR ISOTROPIC MESON DECAYS IN STAR'S MAIN TPC

9:30 Tim Schroeder and Jon Carnahan, Southern Arkansas University, and Northern Illinois University, DeKalb, Illinois. LASER EXCITATION ATOMIC FLUORESCENCE SPECTROSCOPY IN A HELIUM MIP

9:45 Andrew Wright, University of Arkansas at Little Rock. MECHATRONIC DESIGN OF A TREADED MOBILE ROBOT FOR MINE SWEEPING

10:00 Break - Refreshments - Third Floor Lobby

VERTEBRATE ZOOLOGY II
Location: Room 2307, Third Floor

Chairperson: Henry W. Robison, Southern Arkansas University

Time Topic
9:00 Gregory G. Humphreys and Thomas A. Nelson, Deltic Timber Company, El Dorado, Arkansas, and Eastern Illinois University, Charleston, Illinois. MORTALITY OF ADULT WHITE-TAILED DEER ON FORT CHAFFEE, ARKANSAS

9:15 John P. Hart and David H. Jamieson, USDA Wildlife Services, Grand Rapids, Minnesota, and Arkansas State University at Newport. ESTIMATING THE WEIGHT OF EASTERN GRAY WOLVES (CANIS LUPUS LYCAON) FORM CHEST Girth MEASUREMENTS

9:30 Hubert Hervey, Bird Study Group, LSUS Museum of Life Sciences, Louisiana. LEAST TERN: SUCCESS OF NESTING COLONIES ON RED RIVER

9:45 Renn Tumison and Anthony Rocconi, Henderson State University. OCCURRENCE OF A SECOND SUBSPECIES OF BOX TURTLE (TERRAPENE CAROLINA) IN ARKANSAS

10:00 Break - Refreshments - Third Floor Lobby

VERTEBRATE ZOOLOGY II
Location: Room 2307, Third Floor

Chairperson: Phoebe Harp, Arkansas State University

Time Topic
10:30* Allison B. Neely and Edmond J. Pert, University of Arkansas at Pine Bluff. FEEDING RELATIONS BETWEEN TWO SYTOPIC, MORPHOLOGICALLY SIMILAR FISHES, THE BLACKSPOTTED TOPMINNOW, FUNDULUS OLIVACEUS AND WESTERN MOSQUITOFISH, GAMBUSA AFFINIS

10:45 David A. Saugey, J. D. Wilhide, and Betty G. Crump, U.S. Forest Service, Ouachita National Forest, and Arkansas State University. OCCURRENCE AND DISTRIBUTION OF THE SILVERHAIR ED BAT, LASIONYCTERIS NOCTIVAGANS, IN ARKANSAS

11:00 Stanley E. Trauth, Malcolm L. McCauley, and Michael E. Cartwright, Arkansas State University, and Wildlife Management Division, Arkansas Game and Fish Commission. BREEDING MORTALITY IN THE WOOD FROG, RANA SYLVATICA (ANURA: Ranidae), FROM NORTHCENTRAL ARKANSAS

11:15 Gregory G. Humphreys and Thomas A. Nelson, Deltic Timber Corporation, El Dorado, Arkansas, and Eastern Illinois University, Charleston, Illinois. HOME RANGE AND MOVEMENTS OF WHITE-TAILED DEER ON FORT CHAFFEE, ARKANSAS

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BOTANY and ENVIRONMENTAL SCIENCE
Location: Room 2308/2309, Third Floor
Chairperson: Gerald Walsh

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<tbody>
<tr>
<td>9:00**</td>
<td>Michael R. McCallum, Shauntan Moore, and Jon Russ, Arkansas State University. <strong>HPLC ANALYSIS OF LICHEN ACIDS IN BIOGENIC ROCK CRUSTS</strong></td>
</tr>
<tr>
<td>9:15**</td>
<td>John W. Prather, Kimberly G. Smith, Cecilia Riley, and Mike Mlodinow, University of Arkansas at Fayetteville, and Gulf Coast Bird Observatory, Lake Jackson, Texas. <strong>CHARACTERISTICS OF SOME FRUITING PLANT SPECIES IN NORTHWEST ARKANSAS, AND THE AVIAN ASSEMBLAGES THAT FEED ON THEM</strong></td>
</tr>
<tr>
<td>9:30</td>
<td>James H. Peck, University of Arkansas at Little Rock. <strong>FLORISTIC STATUS OF LOG FERNS (DROPTERIS) IN ARKANSAS</strong></td>
</tr>
<tr>
<td>9:45</td>
<td>Ronald L. Johnson, Danny Ward, and Richard S. Grippo, Arkansas State University. <strong>TEMPORAL VARIATION OF BIOTIC AND ABIOTIC FACTORS OF THE SOUTH FORK OF THE SPRING RIVER, ARKANSAS</strong></td>
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<tr>
<td>10:00</td>
<td>Break - Refreshments - Third Floor Lobby</td>
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BOTANY and ENVIRONMENTAL SCIENCE
Location: Room 2308/2309, Third Floor
Chairperson: Dan Marsh, Henderson State University

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<tr>
<td>10:30</td>
<td>Robert Brewington, Richard Williams, and Jeff Earl, Arkansas Agricultural Experiment Station, and University of Arkansas at Monticello. <strong>TRAVEL COST MODEL FOR DETERMINING PROCUREMENT ZONES USING GIS</strong></td>
</tr>
<tr>
<td>10:45</td>
<td>Jeff Earl, Richard Kluender, and Robert Brewington, Arkansas Agricultural Experiment Station, and University of Arkansas at Monticello. <strong>A METHOD TO PREDICT THE REGIONAL LONG-TERM TIMBER SUPPLY USING GIS AND OTHER PUBLICLY AVAILABLE DATA</strong></td>
</tr>
<tr>
<td>11:00</td>
<td>Jeff Earl, Robert Brewington, and Richard Kluender, Arkansas Agricultural Experiment Station, and University of Arkansas at Monticello. <strong>COMMODITY AND NON-COMMODITY VALUATION OF A SMALL ACREAGE NON-INDUSTRIAL LANDOWNER HOLDING</strong></td>
</tr>
<tr>
<td>11:30</td>
<td>Miah M. Adel, University of Arkansas at Pine Bluff. <strong>IN QUEST OF GLOBAL WARMING SIGNATURES IN COASTAL CLIMATE DATA</strong></td>
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