

## **Edwin A. Lewis, Ph.D.**

### **Professor**

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### **Career Summary**

Over 30 years of academic administration, teaching, and research experience at four major universities. Administrative experience involved strategic planning, budget management, fund raising, and management of faculty and staff while serving as Associate Dean for Research and as Department Head of Chemistry. Teaching and research experience at both the undergraduate and graduate levels and the establishment and management of an independent research program that resulted in more than \$7 M in external funding. This has resulted in the publication of 140 peer reviewed papers, more than 100 oral presentations by students at regional, national and international scientific meetings, and the awarding of 6 MS and 7 Ph.D. graduate degrees in chemistry.

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### **Professional Experience**

<b>Mississippi State University, Mississippi State, MS</b> Professor, Department of Chemistry	<b>2008 - Present</b>
<b>Mississippi State University,</b> Professor and Head, Department of Chemistry	<b>2008 - 2015</b>
<b>Northern Arizona University, Flagstaff, Arizona</b> Associate Dean for Research College of Engineering and Natural Sciences	<b>2007 - 2008</b>
<b>Northern Arizona University, Flagstaff, Arizona</b> Professor of Chemistry	<b>2003 - 2008</b>
<b>Energetic Genomics Corp., Lindon, UT</b> Executive Vice President and CSO	<b>2001 - Present</b>
<b>Calorimetry Sciences Corp., Spanish Fork, Utah</b> Executive Vice President and CSO (1992 to 2001) Vice President Calorimetry Products (Hart Scientific Inc., 1989 - 1992)	<b>1984 - 2001</b>
<b>Brigham Young University, Provo, UT</b> Adjunct Professor of Chemistry (1992 - 2004) Research Professor, Dept. of Chemistry and Biochemistry (1986 - 1992) Associate Research Professor, Thermochemical Institute (1981 - 1986)	<b>1981 - 2004</b>
<b>The University of Alabama, Tuscaloosa, Alabama</b> Assistant Professor, Chemistry Dept. (Tenure granted 1980)	<b>1975 - 1981</b>

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## **Education**

University of New Mexico, Albuquerque, New Mexico  
**Chemistry, B.S., ACS** (1969)

University of New Mexico, Albuquerque, New Mexico  
**Physical Biochemistry, Ph.D.** (1972)

The University of Texas Health Sciences Center, San Antonio, Texas  
**Biochemistry, R.A. Welch Foundation Postdoctoral Fellow** (1972 – 1975)

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## **Administrative Activities**

### **Mississippi State University, Mississippi State, MS Professor and Head, Department of Chemistry**

- Responsible for administration of a department having 24 tenure-track and instructional faculty and 5 support staff.
- Hired 9 tenure-track faculty and 3 instructional faculty since 2008 (with 1 additional tenure-track faculty member and 1 additional instructor to be hired for 2016).
- Proposal review, approval of pre-award department support commitments, e.g. allocation of matching funds, staff, space, and research infrastructure.
- Fundraising with donations in excess of \$1,000,000 in department endowments. Also established annual scholarship golf tournament.
- Have been instrumental in infrastructure development including acquisition and/or upgrades to the departments instrumentation including: the 600, 500 and 300 MHz NMRs, X-ray diffractometer, EPR, UHPLC-Q/TOF MS, ICP-MS, GC and HPLC mass spectrometers, UV-Vis, FT-IR, and NIR spectrophotometers, etc.

### **Northern Arizona University, Flagstaff, Arizona Associate Dean for Research, College of Engineering and Natural Sciences**

- Proposal review, approval of pre-award college support commitments, e.g. allocation of matching funds, staff, space, and research infrastructure.
- Coordinated multidisciplinary or college wide large scale proposals, e.g. NSF-MRI proposals.
- Served as the college's representative to the university research administration, e.g. the office of the Vice President for Research, Science Advisory Board, and the Intellectual Property Committee.
- Advised the Dean regarding budgets and strategic planning for development of the college's research infrastructure.
- Sought funding from potential research sponsors including donors and agencies.
- Chaired the college Research Council.
- Prepared research promotion materials and ad copy.

### **Northern Arizona University, Flagstaff, Arizona Professor of Chemistry**

- University service at NAU included: serving as the chair of the department's strategic planning committee, as chair of the 2007 and 2006 department faculty search committees for the hiring of three new faculty (2 assistant professors in Chem. Ed. and a permanent Lecturer), on the departments planning committee for the new 80,000 ft<sup>2</sup> lab sciences building, on the department faculty status committee, on the college P&T committee (3 years), on the College of Engineering and Natural Sciences dean's audit

committee, on the CENS Dean's Research Council, and as interim Chair of the University Science Advisory Board (2006).

**Calorimetry Sciences Corp., Spanish Fork, Utah**

**Executive Vice President and CSO** (1992 to 2001)

**Vice President Calorimetry Products** (Hart Scientific Inc., 1989 to 1992)

- Directly responsible for increasing the annual revenues for the calorimetry product line from less than \$800 K in 1990 to \$4.5 M in 2000.
- Supervised 18 R&D, marketing, technical support, and assembly personnel.
- Directed R&D including new instrument and new applications development.
- Created a number of custom calorimeters accounting for 10% of annual revenues.
- Responsible for obtaining approximately \$1.5 M in state and federal SBIR funding
- Responsible for production management including personnel development, inventory and budget management, quality control, and upgrading of older calorimetry products. Developed application based marketing strategies and technical materials to support calorimetry product line sales

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**Professional & Scholarly Activities**

**Research Fellow, Thermodynamics Division, DOE BETC** (Sabbatical leave 1983-1984)

Directed studies of matrix interactions influencing the distribution of potential EOR agents.

**Calorimetry Conference** (Conference Chairman 1996, Program Chair 50<sup>th</sup> Annual Meeting 1995, Director 1992-1993, and 1980-1983), **American Chemical Society-Education Division** (National Committee Member 1981-1983)

**Reviewer for the following Journals and Granting Agencies**

- NSF, NIH, DOE, ACS-PRF, BIO5, Research Corporation, and NAU-TRIF
- *Analytical Biochemistry, Biochim. Biophys. Acta, Biochemistry, Biophysical Journal, Biophysical Chemistry, Biopolymers, Geochimica et Cosmochimica Acta, Journal of Pharmaceutical Sciences, Journal of Physical Chemistry, Nucleic Acids Res., Photochemistry and Photobiology, Proteins, and Sensors and Actuators.*

**NIH, Nanotechnology**, Review Panel (2008)

**NIH, Genes Genomics and Genetics**, Review Panel (2009-2010)

**Founder** (along with Drs. Jack Correia (UMMC) and Randy Wadkins (UM)), **Mississippi Regional Biophysics Consortium**, founded in 2008, MRBC will be holding its 8<sup>th</sup> annual meeting in 2016.

**Editor**, *Molecules*, Special Edition on G-quadruplex and i-Motif DNAs (2013)

**External Reviewer** (along with Dr. R. Nuzzo (U IL)), *Department of Chemistry*, University of Texas Pan American, March 2014.

**NSF, Biology, MCB**, Molecular Biophysics Review Panel (2014)

**NSF, Biology/MCB**, Genetic Mechanisms, *ad hoc* reviewer (2014)

**Symposium Organizer**, *Frontiers in Nucleic Acid Chemistry*, 2015 Southeast/Southwest Regional ACS Meeting, Memphis, TN.

**2015 Mississippi Chemist of the Year**, awarded by the Mississippi Section of the American Chemical Society.

**NSF, Chemistry of Life Processes**, Review Panel, Nucleic Acid/Probes (2016)

**NSF, Biology/MCB, Molecular Biophysics, *ad hoc* reviewer (2014)**

### **Collaborators and Other Affiliations**

- Dr. Herman O. Sintim, Department of Chemistry, Purdue University
- Dr. Frederick M. MacDonnell, Department of Chemistry and Biochemistry, University of Texas Arlington
- Dr. Laurence Hurley, Depts. of Chemistry and Pharmacy and Toxicology, University of Arizona (AZ Cancer Center)
- Dr. Jonathan B. Chaires, Brown Professor of Biophysics, University of Louisville Medical School (J.G. Brown Cancer Center)
- Dr. David W. Wilson, Department of Chemistry, Georgia State University
- Dr. David Graves, Department of Chemistry, University of Alabama Birmingham
- Dr. Jack Correia, Department of Biochemistry, University of Mississippi Medical Center.

### **Thesis Advisor and Postgraduate-Scholar Sponsor:**

Six Master's Theses directed, seven Ph.D. Dissertations directed, and two Postdoctoral Fellows directed. In the last 8 years, I have served on 22 graduate committees.

### **Master's students:**

- Thomas (Jack) Barkley (MS 1981 UA). MD in private practice in Alabama.
- Matt Freyer (MS 2007 NAU). Chemical Hygienist at Northern Arizona University.
- Jamie Dettler (MS 2008 NAU)
- Joe Ramos (MS 2008 NAU). Assistant professor at NAU.
- Meredith Blynn (MS 2009 NAU). Enrolled in the U of Arizona School of Pharmacy.
- Sarah Beth Jones (MS 2013 MSU). Quality Associate at Baxter Pharmaceuticals.

### **Ph.D. students:**

- Renee Reams (Ph.D. 1984 BYU). Professor, School of Pharmacy, Florida A&M
- Scott Mehr (Ph.D. 1990 BYU). Senior Scientist, DuPont.
- Jim Matheson (Ph.D.1991 BYU). Patent Agent, Pacific Northwest National Labs.
- Jamie Dettler (Ph.D. 2011 MSU). Postdoc at MD Anderson, Medical Liaison Johnson & Johnson.
- Jingjing Cui (Ph.D. 2013 MSU). Instructor, Chemistry Department, U of Houston
- Vu Le (Ph.D. 2014 MSU). Postdoc, MIT, Postdoc, U Penn.
- Venkata Machha (Ph.D. 2014 MSU). Postdoc, Mayo Clinic, Rochester.

### **Postdoctoral Scholars:**

- Dr. Derek Cashman (ORNL), Instructor at Tennessee State University.
- Dr. Narayana Nagesh, CCMB, Hyderabad, India.

**Currently supervising 3 Ph.D. students:** Clinton Mikek, Jesse DuPont, and Amanda Metz.

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## **Research Funding**

Total career research funding received is in excess of \$7 M. Research grants and awards received during the last 10 years are listed below.

- *"High Throughput DSC for Drug Screening"*, National Institutes of Health/National Cancer Institute, SBIR "Fast-Track" Project: 1 R43 CA 103437-01A1, June 1, 2004 – Dec 31, 2006, **\$1,140,000**.
- *"LC-MS Instrument Award"*, NAU-TRIF (Prop 301) Infrastructure Grant, July 2006, **\$120,000**. (EAL Co-PI)

- “*Biophysical Studies of G-Quadruplex Drug Interactions*”, NAU-TRIF (Prop 301) Postdoctoral Grant Program, July 1, 2004 – June 30 2007, **\$255,000**.
- “*Light Scattering Instrument Award*”, NAU-TRIF (Prop 301) Infrastructure Grant, July 2007, **\$75,000**. (EAL Co-PI)
- “*Drug Targeting the I-Motif in the C-MYC Promoter*”, Arizona Biomedical Research Commission Category II: ID No. 5-007, September 1, 2005 – August 31, 2008, **\$517,500**.
- “*Deconvoluting the Structural Heterogeneity of the Bcl-2 Promoter Quadruplex to Enhance Drug Targeting*”, Arizona Biomedical Research Commission Category II a: ID No 05-002A, September 1, 2005 – August 31, 2008, **\$449,712**.
- “*Refurbishment of the 600 MHz NMR and Cyberinfrastructure at the Magnetic Resonance Facility at MSU*”, NSF Award ID 0840220, January 1, 2010 – December 31, 2012, **\$510,000**.
- “*G-quadruplex topology-selective probes*”, NSF Award ID CHE 1518006, August 1, 2015 – July 31, 2018, **\$625,000**.

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## Comprehensive List of Publications

**ResearchGate** lists 2,700 citations, an RG Score of 37.48 and an h-index of 29.

**GoogleScholar** lists 3,034 citations, an h-index of 29 and an i-10 index of 65.

1. Hansen L.D., Litchman W.M., **Lewis E.A.**, and Allred R.E. (1969) “An Inexpensive Motor Driven Buret,” *J. Chem. Educ.*, **46**, 876-877
2. Hansen L.D., Kenny D., Litchman W.M., and **Lewis E.A.** (1971) “A Thermometric Titration Experiment for Analytical and Physical Chemistry,” *J. Chem. Educ.*, **48**, 851-852
3. Hansen L.D., **Lewis E.A.**, Christensen J.J., Izatt R.M. and Wrathall D.P. (1971) “Electrostatic and Resonance Energy Effects in Proton Ionization from Pyridinecarboxylic and Anilinesulfonic Acids,” *J. Am. Chem. Soc.*, **93**, 1099-1101
4. Hansen L.D. and **Lewis E.A.** (1971) “Analysis of Binary Mixtures by Thermometric Titration Calorimetry,” *Anal. Chem.*, **43(11)**, 1393-1397
5. Hansen L.D. and **Lewis E.A.** (1971) “The Evaluation of Aqueous TRIS Solutions as a Chemical Standard for Titration Calorimetry,” *J. Chem. Thermodynamics*, **3**, 35-41
6. Baker F.B., Fitzgibbon G.C., Pavone D., Holley C.E. , Hansen L.D., and **Lewis E.A.** (1972) “Enthalpies of Formation of Sm<sub>2</sub>O<sub>3</sub> (monoclinic) and Sm<sub>2</sub>O<sub>3</sub> (cubic),” *J. Chem. Thermodynamics*, **4**, 621-636
7. Vander Jagt D.L., Hansen L.D., **Lewis E.A.** and Han L.-P.B. (1972) “Calorimetric Determination of the Micro Ionization Constants of Glutathione,” *Archives of Biochemistry and Biophysics*, **153(1)**, 55-61
8. **Lewis E.A.** and Hansen L.D. (1973) “Thermodynamics of Binding of Guest Molecules to  $\alpha$ - and  $\beta$ -Cyclodextrins,” *J. Chem. Soc., Perkin Trans., II*, 2081-2085
9. Hansen L.D. and **Lewis E.A.** (1973) “Electrostatic Effects on the Proton Ionization Reactions of 2-, 3-, and 4-Piperidinemonocarboxylic Acids,” *J. Phys. Chem.*, **77**, 286-289
10. Rees A.W., Debuysere M.S., and **Lewis E.A.** (1974) “Soluble Nucleoprotein of Compact Configuration,” *Biochim. Biophys. Acta*, **361**, 97-104
11. Rees A.W., **Lewis E.A.**, and Debuysere M.S. (1974) “Rapid Alignment of Schlieren and Interference Optics in the Analytical Centrifuge,” *Analytical Biochemistry*, **62**, 19-65
12. Tapscott R.E., Hansen L.D. and **Lewis E.A.** (1975) “Calorimetric Studies of Stereoselective Vanadyl(IV) Tartrate Reactions,” *J. Inorg. Nucl. Chem.*, **37**, 2517-2519

13. **Lewis E.A.**, Hansen L.D., Baca E.J. and Temer D.J. (1976) "Effects of Alkyl Chain Length on the Thermodynamics of Proton Ionization from Arsonic and Arsinic Acids," *J. Chem. Soc., Perkin Trans., II*, 125-128
14. **Lewis E.A.**, Debuysere M.S., and Rees A.W. (1976) "Configuration of Unsheared Nucleohistone. Effects of Ionic Strength and of Histone F1 Removal," *Biochemistry*, **15**, 186-192
15. Rees A.W., Debuysere M.S., and **Lewis E.A.** (1977) "Difference Sedimentation Velocity Adapted to Low Molecular Weight Proteins," *Arch. Biochem. Biophys.*, **182**, 478-487
16. Pittman C.U., Rounsefell T.D., **Lewis E.A.**, Sheets J.E., Edwards B.H., Ransch M.D., and Mintz E.A. (1978) "The Vinyl Reactivity of (n<sup>5</sup>-vinyl-cyclopentadienyl) Dicarboxylnitrosylchromium. A Novel Vinyl Organometallic Monomer," *Macromolecules*, **11**, 560-569
17. St. Pierre T., **Lewis E.A.**, and Levy G.C. (1979) "Polyvinylamine: Calorimetric and NMR Studies," in Polymeric Amines and Ammonium Salts, E.J. Goethals, ed., Pergamon Press, Oxford, 245-248
18. Pittman C.U., Habib M.M., Holloway C.H., and **Lewis E.A.** (1980) "Homogenizing Heterogenous Catalysts. Preparation, Characterization and Application of Hydrocarbon-Miscible Metal Oxides," *Organic Coatings and Plastics Chemistry*, **42**, 279-284
19. **Lewis E.A.**, Habib M.M., Holloway C.H., and Pittman C.U. (1980) "Ultracentrifugation Studies of the Particle Size Distribution of "Homogenized" Heterogenous Catalysts," *Organic Coatings and Plastics Chemistry*, **42**, 285-288
20. Sukow W.W., Sandberg H.E., **Lewis E.A.**, Eatough D.J. and Hansen L.D. (1980) "Bindings of the Triton X Series of Nonionic Surfactants to Bovine Serum Albumin," *Biochemistry*, **19**, 912-917
21. **Lewis E.A.**, Habib M.M., and Pittman C.U. (1981) "Characterization of Hydrocarbon Soluble Metal Oxides. Precursors to Supported Catalysts," *J. Macromol. Sci.-Chem.*, **A15(5)**, 915-939
22. Pittman C.U., **Lewis E.A.**, and Habib M.M. (1981) "Homogenizing Metal Oxide Catalysts," *J. Macromol. Sci.-Chem.*, **A15(5)**, 987-914
23. **Lewis E.A.**, Barkley T.J., and St. Pierre T. (1981) "Calorimetric Titration of Polyvinyl amine and Polyethyleneimine," *Macromolecules*, **14**, 546-551
24. Rehfeld S.J., Hansen L.D., **Lewis E.A.**, and Eatough D.J. (1982) "Alkaline Earth Cation Binding to Large and Small Bilayer Phosphatidylserine Vesicles. A Calorimetric and Potentiometric Study," *Biochim. Biophys. Acta*, **691**, 1-12
25. Rehfeld S.J., **Lewis E.A.** and Eatough D.J. (1983) "Calorimetric Investigation of the Rate of Calcium Complexation Induced Acyl Chain Crystallization of Small and Large Bilayer Phosphatidylserine Vesicles," *Colloids and Surfaces*, **6**, 377-384
26. **Lewis E.A.** and Reams R.R. (1983) "Histone H1: Ultracentrifugation Studies of the Effects of Ionic Strength and Denaturants on the Solution Conformation," *Arch. Biochem. Biophys.*, **223**, 185-192
27. **Lewis E.A.**, Barkley T.J., Reams R.R., Hansen L.D. and St. Pierre T. (1984) "Thermodynamics of Proton Ionization from Poly(vinylammonium salts)," *Macromolecules*, **17(12)**, 2874-2881
28. Hansen L.D., **Lewis E.A.** and Eatough D.J. (1985) "Instrumentation and Data Reduction," Chapter 3 in Analytical Solution Calorimetry, K. Grime, ed., John Wiley & Sons, New York, 57-95
29. Eatough D.J.; **Lewis E.A.**; and Hansen L.D. (1985) "Determination of  $\Delta H_R$  and  $K_{eq}$  Values," Chapter 5 in Analytical Solution Calorimetry, K. Grime, ed., John Wiley & Sons, New York, 137-161
30. Eatough D.J., Benner C., Mooney R.L., Bartholomew D., Steiner D.S., Hansen L.D., Lamb J.D., **Lewis E.A.** and Eatough N.L. (1986) "Gas and Particle Phase Nicotine in Environmental Tobacco Smoke," Proceedings of the 79th Air Pollution Control Association Meeting, Minneapolis, MN, 22-27 June, Paper No. 86-68.5

31. Eatough D.J., Bennett J.R., Lytle N., Brutsch M., Luke T.T., Houtrouw S., Mangelson N.F., Hill M.W., **Lewis E.A.**, Hansen L.D., Eatough N.L. and Farber R.J. "Identification of the Presence of Coal-Fired Power Plant Emissions Using Spherical Particles and Total Fluoride as Tracers," Transactions of APCA Specialty Conference, Visibility Protection: Research and Policy Aspects, P.S. Bhardwaja, ed., Sept. 1986, Grand Teton National Park, WY, pp. 720-735
32. Eatough D.J., Brutsch M., Lewis L., Hansen L.D., **Lewis E.A.**, Eatough N.L. and Farber R.J. (1986) "Diffusion Denuder Sampling Systems for the Collection of Gas and Particle Phase Organic Compounds," Transactions of APCA Specialty Conference, Visibility Protection: Research and Policy Aspects, P.S. Bhardwaja, Ed., Sept. 1986, Grand Teton National Park, WY, pp. 397-406
33. Eatough D.J., Benner C.L., Hansen L.D., **Lewis E.A.**, Eatough N.L. and Farber R.J. (1987) "Determination of the Phase Distribution of Semi-Volatile Organic Compounds with Diffusion Denuders," 80th Annual Meeting of the Air Pollution Control Association, Paper No. 87-70.2, New York, New York, 21-26 June.
34. Eatough D.J., Benner C.L., Bayona J.M., Caka F.M., Tang H., Lewis L., Lamb J.D., Lee M.L., **Lewis E.A.** and Hansen L.D. (1987) "Sampling for Gas Phase Nicotine in Environmental Tobacco Smoke with a Diffusion Denuder and a Passive Sampler," Proceedings of the 1987 EPA/APCA Symposium on Measurement of Toxic and Related Air Pollutants, APCA, Pittsburgh, PA, 132-139
35. Eatough D.J., Benner C.L., Bayona J.M., Caka F.M., Mooney R.L., Lamb J.D., Lee M.L., **Lewis E.A.**, Hansen L.D. and Eatough N.L. "Identification of Conservative Tracers of Environmental Tobacco Smoke," Indoor Air '87 - Proceedings of the 4th International Conference on Indoor Air Quality and Climate, **2**, Berlin (West), 17-21 August 1987, pp. 3-7
36. Eatough D.J., Wolfley S.L., Dungan L.J., **Lewis E.A.** and Hansen L.D. (1987) "Thermodynamics of Molecular Interactions in Model Coal Liquids. I.  $\Delta G$ ,  $\Delta H$ , and  $\Delta S$  Values for the Interactions Among m-Cresol, Quinoline, and Aniline in Decane at 25°C," *J. Energy & Fuels*, **1**, 94-98
37. **Lewis E.A.**, Tang H., Crawford J.W., Hansen L.D. and Eatough D.J. (1988) "A Laboratory for the Study of Environmental Tobacco Smoke Components," 81st Annual Meeting of the Air Pollution Control Association, Dallas, Texas, 19-24 June, Paper No. 88-76.8
38. Aghdaie N., Sutton S., Hansen L.D., Eatough D.J., **Lewis E.A.** and Farber R.J. (1988) "Diffusion Denuders for the Identification of Artifacts in the Sampling of Semi-Volatile Particulate Organic Compounds," 81st Annual Meeting of the Air Pollution Control Association, Dallas, Texas, 19-24 June, Paper No. 88-53.3
39. Eatough D.J., Hansen L.D. and **Lewis E.A.** (1988) "Assessing Exposure to Environmental Tobacco Smoke," Indoor and Ambient Air Quality, R. Perry, P.W. Kirk, eds., Selper Ltd., London, 131-140
40. Tang H., Benner C.L., Richards G.H., Lee M.L., **Lewis E.A.**, Hansen L.D. and Eatough D.J. (1988) "Monitoring of Environmental Tobacco Smoke Nicotine with a Sorbent Bed-Capillary Gas Chromatograph System," *Intern. J. Environ. Anal. Chem.*, **33**, pp. 197-208
41. Hansen L.D., Randzio S.L., Lewis L., **Lewis E.A.** and Eatough D.J. (1988) "Heat of Re-Forming a Coal Liquefaction Product from Distillate Fractions", *Can. J. Chem.*, **66**, 794-797
42. Randzio S.L., Eatough D.J., **Lewis E.A.** and Hansen L.D. (1988) "An Automated Calorimeter for the Measurement of Isobaric Expansivities and of Isothermal Compressibilities of Liquids by Scanning Pressure from 0.1 to 400 MPa at Temperatures Between 303 and 503 K," *J. Chem. Thermodynamics*, **20**, 937-948
43. Eatough N.L., McGregor S., **Lewis E.A.**, Eatough D.J., Huang A.A. and Ellis E.C. (1988) "Comparison of Six Denuder Methods and a Filter Pack for the Collection of Ambient  $\text{HNO}_3(\text{g})$ ,  $\text{HNO}_2(\text{g})$  and  $\text{SO}_2(\text{g})$  in the 1985 NSMC Study," *Atmos. Environ.*, **22(8)**, 1601-1618

44. Benner C.L., Eatough N.L., **Lewis E.A.**, Eatough D.J., Huang A.A. and Ellis E.C. (1988) "Diffusion Coefficients for Ambient Nitric and Nitrous Acids from Denuder Experiments in the 1985 Nitrogen Species Methods Comparison Study," *Atmos. Environ.*, **22(8)**, 1669-1672
45. Tang H., Richards G., Gunther K., Crawford J., Lee M.L., **Lewis E.A.** and Eatough D.J. (1988) "Determination of Gas Phase Nicotine and 3-Ethenylpyridine, and Particulate Phase Nicotine in Environmental Tobacco Smoke with a Collection Bed-Capillary Gas Chromatography System," *Journal of High Resolution Chromatography & Chromatography Communications*, **11**, 775-782
46. Criddle R.S., Breidenbach R.W., Lewis E.A., Eatough D.J. and Hansen L.D. (1988) "Effects of temperature and oxygen depletion on metabolic rates of tomato and carrot cell cultures and cuttings measured by calorimetry," *Plant, Cell and Environment*, **11**, 695-701
47. Eatough D.J., Lewis L., Lamb J.D., Crawford J., **Lewis E.A.**, Hansen L.D. and Eatough N.L. (1988) "Nitric and Nitrous Acids in Environmental Tobacco Smoke," Proceedings of the 1988 EPA/APCA International Symposium: Measurement of Toxic and Related Air Pollutants, May, 104-112.
48. Eatough D.J., Wooley K., Tang H., **Lewis E.A.**, Hansen L.D., Eatough N.L. and Ogden M.W. (1988) "Sampling Gaseous Compounds in Environmental Tobacco Smoke," Proceedings of the 1988 EPA/APCA International Symposium: Measurement of Toxic and Related Air Pollutants, May, 739-749.
49. Eatough D.J., Hansen L.D. and **Lewis E.A.** (1988) "Methods for Assessing Exposure to Environmental Tobacco Smoke," Transactions of an A&WMA International Specialty Conference, Combustion Processes and the Quality of the Indoor Environment, J.P. Harper, ed., Niagara Falls, New York, September 1988, 183-200
50. Eatough D.J., Sedar B., Lewis L., Hansen L.D., **Lewis E.A.** and Farber R.J. (1989) "Determination of Semivolatile Organic Compounds in Particles in the Grand Canyon Area," *Aerosol Science and Technology*, **10**, 438-449
51. Eatough D.J., Benner C.L., Bayona J.M., Richards G., Lamb J.D., Lee M.L., **Lewis E.A.** and Hansen L.D. (1989) "Chemical Composition of Environmental Tobacco Smoke. 1. Gas-Phase Acids and Bases," *Environ. Sci. Technol.*, **23(6)**, 679-687
52. Benner C.L., Bayona J.M., Caka F.M., Tang H., Lewis L., Crawford J., Lamb J.D., Lee M.L., **Lewis E.A.**, Hansen L.D. and Eatough D.J. (1989) "Chemical Composition of Environmental Tobacco Smoke. 2. Particulate-Phase Compounds," *Environ. Sci. Technol.*, **23(6)**, 688-699.
53. Hansen L.D., **Lewis E.A.**, Eatough D.J., Fowler D.P. and Criddle R.S. (1989) "Prediction of long-term growth rates of larch clones by calorimetric measurement of metabolic heat rates," *Can. J. For. Res.*, **19**, 606-611
54. Eatough D.J., Benner C.L., Tang H., Landon V., Richards G., Caka F.M., Crawford J., **Lewis E.A.**, Hansen L.D. and Eatough N.L. (1989) "The Chemical Composition of Environmental Tobacco Smoke III. Identification of Conservative Tracers of Environmental Tobacco Smoke," *Environment International*, **15**, 19-28
55. **Lewis E.A.**, Hart R.M. and Greenfield H. (1989) "Design and Testing of a New Isothermal Flow Gas Calorimeter: The Hart Field-Deployable Natural Gas Energy Meter," *Thermochimica Acta*, **154**, 167-185
56. Matheson J.D., Hansen L.D., Eatough D.J. and **Lewis E.A.** (1989) "Calorimetric Titration Analysis of a Coal-Derived Liquid: Determination of Phenolic, Pyridinic, and Carboxylic Compounds," *Thermochimica Acta*, **154**, 145-160
57. Mehr S.R., Eatough D.J., Hansen L.D., **Lewis E.A.** and Davis J.A. (1989) "Calorimetry of Heterogeneous Systems: H<sup>+</sup> Binding to TiO<sub>2</sub> in NaCl," *Thermochimica Acta*, **154**, 129-143
58. Tang H., Eatough D.J., **Lewis E.A.**, Hansen L.D., Gunther K., Belnap D.M. and Crawford J. (1989) "The Generation and Decay of Environmental Tobacco Smoke Constituents in an Indoor



Environment," Proceedings, EPA/A&WMA Symposium, Measurement of Toxic and Related Air Pollutants, A&WMA, Pittsburgh, pp. 596-605

59. Caka F.M., Eatough D.J., **Lewis E.A.**, Tang H., Hammond S.K., Leaderer B.P., Koutrakis P., Spengler J.D., Fasano A., McCarthy J., Ogden M.W. and Lewtas J. (1989) "A Comparison Study of Sampling Techniques for Nicotine in Indoor Environments," Proceedings, EPA/A&WMA Symposium, Measurement of Toxic and Related Air Pollutants, A&WMA, Pittsburgh, pp. 525-541
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