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DECLARATION OF GERALD MEYER, PH.D.

1. My name is Gerald Meyer, Ph.D. and I reside in Baltimore, Maryland.

2. I received a doctoral degree in chemistry, have published over 75 scientific investigations in chemistry and am currently a full Professor of Chemistry at Johns Hopkins University. A copy of my curriculum vitae is attached.

3. I specialize in inorganic chemistry and physico-chemical assays and have taught upper level courses in physical and analytical methods. I have supervised the doctoral work of 23 current graduate students or students who have completed doctoral dissertations. I am thus quite familiar with the requirements for validation of a physical or analytical method before acceptance and use.

4. I am also the Director of the National Science Foundation Center for Collaborative Research Activities in Environmental Molecular Science (CRAEMS) entitled "Environmental Redox-Mediated Dehalogenation Chemistry," which has a total budget of $3.6 million. This work has made me familiar with issues related to low-level contamination or presence of chlorine-containing substances in the environment and testing for their presence.

5. I have reviewed the publications on FDA's website detailing the methods and validation for the liquid chromatography electrospray mass spectroscopy assay for chloramphenicol and the more recent work performed with the intent to validate this methodology for the detection of chloramphenicol residues in crabmeat.

6. While the work to date on this test method has been impressive, based on the reported work, I do not believe that the test method is currently ready for commercial use or application in routine testing. There are a number of additional evaluations that should be performed before the test is used outside of experimentation and laboratory work.

7. First, the report does not establish the limits of detection or the linearity of the response in the crabmeat matrix. The publications do not provide sufficient information to establish a limit of detection. In fact, the investigators' stated intention was the qualitative detection of chloramphenicol in crabmeat. Thus, any use of the methodology to detect and quantify extremely low levels of chloramphenicol in crabmeat is unwarranted.

8. Second, the work to date does not adequately investigate the possibility for interfering peaks in the control experiments. It is well-known that there are sanitizers containing various permutations of chlorine atoms that are used extensively in the fisheries industry. Specifically, polychlorinated sanitizers, such as di- and tri-chloroisocyanuric acid, are potent oxidants that could react or associate with crabmeat to give similar masses and isotopic signatures. It should be a standard practice to insure that these known chlorine-containing solutions do not interfere with the assay or the limits of detection before implementing such a test method for use outside the laboratory. Stated differently, the test validation work did not include purposefully adding known and approved food sanitizers that might mimic the appearance of chloramphenicol in the test method to be sure that the test method can distinguish chloramphenicol from residues of these known and approved sanitizers.

9. Third, regardless of final test method validation work that remains to be done, the test method is not capable of distinguishing chloramphenicol that has been added to the crabmeat by the investigators (or similarly might have been added to crabmeat during processing) from chloramphenicol that might be present naturally and derived from production and release of chloramphenicol into the environment by bacteria known to produce chloramphenicol. That said, when using test methods that have very low limits of detection to test for residues of added

substances, it is important to identify what levels of the substance may be present naturally. This has also not been done.

10. Finally, the authors of the paper rejected any samples that showed chloramphenicol in the background or non-fortified crabmeat. Nor did the investigators specify how many such samples were rejected on this basis, although it appears that at least two such "batches" of unknown origin with apparent or possible baseline chloramphenicol were found. Taken together with the inability of this test to distinguish natural from added chloramphenicol, and based on my familiarity with the difficulty of evaluating extremely low levels of chemical compounds in natural samples, the authors have failed to establish that test positivity indicates the presence of added chloramphenicol. Indeed, the investigators pro forma rejection of positive samples from unspiked crabmeat appears to indicate that they are unaware that chloramphenicol might be present as a natural substance at these levels.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on February 17, 2003.

Gerald Meyer

GERALD J. MEYER

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Education:

Ph. D. (1989) **University of Wisconsin at Madison,** Department of Chemistry (9/85 - 10/89)

B.S. (1985) **State University of New York at Albany**, Departments of Chemistry and Mathematics (9/81 - 5/85)

Dissertation:

"Photoluminescence as A Probe of Semiconductor-Gas Interfaces"

Advisor: Professor Arthur B. Ellis

The photoluminescence properties of modified and unmodified semiconductor surfaces in contact with gases were characterized. For II-VI materials, such as CdS and CdSe, a 'luminescence litmus' test was discovered wherein the excited state(s) of the semiconductor could be modulated by adduct formation with gaseous bases and acids. Spectroscopic measurements allowed quantitative analysis of gas-modulated changes in the surface electric field, surface recombination velocity, and excited state dynamics.

Research Experience:

Professor:
Johns Hopkins University, Department of Chemistry (7/00 – present)

Associate Professor:
Johns Hopkins University, Department of Chemistry (7/97 – 6/00)

Assistant Professor:
Johns Hopkins University, Department of Chemistry (7/91 - 6/97)

Postdoctoral Associate:
University of North Carolina at Chapel Hill (10/89 - 6/91)

Research Assistant:
University of Wisconsin-Madison (1/87 - 10/89)

Research Assistant:
State University of New York at Albany (2/84 - 8/85)

Memberships and Awards:

American Chemical Society.
Electrochemical Society.
Society for Applied Spectroscopy.
Inter-American Photochemical Society.
3M Non-tenured Faculty Award.
Boy Scouts of America, Eagle Rank.
Golden Key Honor Society.

Research Grants:

Current:

Electron Transfer Dynamics in Efficient Molecular Solar Cells. (8/99 - 7/02).
Division of Chemical Sciences, Department of Energy, Total Award: $ 340,849. This year: $125,987.

Molecular Photonic Materials. (9/00 – 8/03)
National Science Foundation, Total Award: $359,301. This year: $183,801.

MRSEC on Nanostructured Materials. (9/00 – 8/05) (5 PIs)
National Science Foundation, Total Award: $9,133,963. This year: $109,833.

CRAEMS: Environmental Dehalogenation Chemistry. (9/00 – 8/05) (4 PIs)
National Science Foundation, Total Award: $2,979,122. This year: $119, 800.

Solar Energy Conversation with Ordered, Molecular, Light Harvesting Arrays. (7/01 – 6/04)
National Renewable Energy Laboratory, Total Award: $462,610. This year: $148, 000.

Spectroscopic and Physical Characterization of Polynuclear Ferric Drugs. (7/01 –6/03)
Watson Pharmaceuticals, Total Award: $238,810. This year: $188,200.

Multicomponent Magnetic Nanowires: New Approaches for Cell Biology. (5 PIs)
Packard Foundation, Total Award: $1,000,000.

Previous:

Photodriven Electron Transfer with Large Internal Reorganization Energy Changes. (9/99 – 8/01)
American Chemical Society, Petroleum Research Fund, Total Award: $65,000. This year: $30,000.

Molecular Photonic Materials. (8/94 - 7/97)
National Science Foundation, Total Award: $315,000.

Acquisition of an ESI-MS for the Johns Hopkins University. (9/99 – 8/00) (4 PIs)
National Science Foundation, Total Award: $142,100.

Development of a Frequency Domain Spectrometer for Photoluminescence, Anisotropy, and Photoelectrochemical Characterization of Excited States. (7/97-6/98)
National Science Foundation, Total Award: $120,840.

Molecular Photonic Materials. (8/94 – 7/97)
National Science Foundation, Total Award: $284,956.

Solar Energy Conversion at Dye Sensitized Nanostructured Electrodes Fabricated by Sol-Gel Processing. (7/93 - 6/97) (Co-PI: Peter Searson, Materials Science and Engineering Department)
National Renewable Energy Laboratory, Total Award: $599,333.

Molecular Solar Energy Conversion by Dye Sensitized Sol-Gel Processed Materials. (7/94 - 6/97)
National Science Foundation, Total Award: $15,000.

Light to Electrical Energy Conversion with Supramolecular Sensitizers. (9/96 – 8/98)
North Atlantic Treaty Organization, Total Award: $6,000.

Electron Transfer Dynamics in Efficient Molecular Solar Cells. (10/96-7/99)
Division of Chemical Sciences, Office of Energy Research, Department of Energy, Total Award: $299,261.

Field Emitter Display Applications (9/95 -10/96)

U.S. Army Research Laboratory, Total Award: $58,750.

Research Group:

Current:

Graduate Students:

Mei Yang
Paul Hoertz
Diane Verelle
Bryan Bergeron
Arnold Stuchs
Laura Bauer
Feng Liu
Jonathon Stromberg
Gerard Higgens
Rachael Carlisle
Andras Martin
Tamae Ito
Chris Clark
Nira Simai

Post Doctoral Associates:

Georg M. Hasselman
David Watson
Sherine Obare

Undergraduate Students:

Joseph Gordonecker
Bert Lai

Former:

Ph.D. Graduates:

Donald V. Scaltrito, Ph.D. 2002
Ping Qu, Ph.D. 2001
George Hasselman, Ph.D. 2000
Fereshteh Farzhad, Ph.D. 1999
Mark Ruthkosky, Ph.D. 1998
Minh C. Ko, Ph.D. 1997
Jeremy M. Stipkala, Ph.D. 1997
Todd A. Heimer, Ph.D. 1996
Felix N. Castellano, Ph.D. 1996

B. S. Graduates:

John O'Callahan
Michael Thandasetti
David Klein
Eugene Ceppa
Erica Dun
Solito Sumulong
Lee Friedman
Mark Zaros
Ely Rothblatt
Emily Orimilikwe
Michelle Kim
Andrea Sachs
Arthur Esswein

University Services:

CRAEMS Center Director:

Principle Investigator and director of an NSF Center for Collaborative Research Activities in Environmental Molecular Science (CRAEMS) entitled "Environmental Redox-Mediated Dehalogenation Chemistry." The Center has 2.7 million dollars of NSF support and 3.6 million dollars of total support for the next five years. Five Hopkins investigators and their collaborators from National Labs and industry will study mechanistic aspects of dehalogenation chemistry. A website has been established: http://www.jhu.edu/~chem/craems/

Committees:

Chemistry Department Colloquium Chair, 1995-96
Chemistry Department Graduate Admissions 1994-98
Chemistry Department Graduate Admissions Chair 1999-00
Chemistry Department Graduate Student Advising 1992-99
Chemistry Department Oral Exams 1993-00
Committee for a New EPR for Chemistry 1995, 1996
Graduate Student Recruitment Committee Chair, 2000
Dunning Hall Renovation Ad Hoc Committee
ESI-MS for the Shared Instruments Facility, 1998-00
Faculty Student Interaction Program Host 1994
Consortium for Nanostructured Materials Participant
Graduate Board Oral Exams 1993-00
Hughes Undergraduate Research Summer Program, 1998
NSF Engineering Research Center Project, DOGEE, 199:
Ph.D. Committees in Chemistry, Physics, and DOGEE
Search Committee for Physical Chemistry Faculty, 1996
Search Committee for Inorganic Chemistry Faculty, 199
Shared Instruments Facility Committee, 2000
Undergraduate Advising 1992-00

Courses Taught:

030.101 *Introductory Chemistry I*, Fall 1997, 1999, 2000
030.356 *Advanced Inorganic Laboratory,* Spring 1992 - 1998
030.449 *Chemistry of Inorganic Compounds,* Fall 1993 - 1995
030.466 *Physical and Analytical Methods,* Fall 1996, 1998
030.503 *Independent Research in Inorganic Chemistry*
030.521 *Independent Research in Inorganic Chemistry II*

030.611 *Electron Transfer,* Fall 1992, Spring 1999, 2001

University Services (continued):

New Courses Developed:

Advanced Inorganic Laboratory: Designed and offered for the first time in 1992. The lab has been offered every year since and is required by the American Chemical Society (ACS) for an ACS certified undergraduate degree. The ACS Committee on Professional Training reviewed and rated the lab course and manual as excellent in 1994.

Physical and Analytical Methods: This course was offered for the first time in the fall of 1996 and again in 1998. The objective is to teach the fundamental principles upon which modern analytical instrumentation is based. The course is designed for senior undergraduate and first year graduate students who had not previously taken an Analytical Chemistry Course.

Electron Transfer: The ubiquitous and essential role electron transfer processes play in many physical, chemical, and biological processes is highlighted in this course. Basic theory, techniques, and literature examples and reviewed in this graduate level course.

Outside Services:

Co-Symposium Organizer:
XIVth Inter-American Photochemical Society (I-APS) Meeting, Clear Water Beach FL, January 2-5, 2003.

Co-Symposium Organizer:
"Nanostructured Electronic and Photonic Materials"
100th Meeting of the Electrochemical Society, Philadelphia, PA, 2002.

DOE Panel Review Committee
Notre Dame Radiation Laboratory, Notre Dame, IN April 17-19, 2002

Editorial Advisory Board :
Langmuir (January 1, 2001 – December 31, 2003)

Co-Symposium Organizer:
"State of the Art: Semiconductor and Metal Nanoparticles for Light Energy Conversion"
222nd National A.C.S. Meeting, Chicago, IL, 2001

Panel Review Committee:
"Career Grants"
National Science Foundation, Arlington, VA Oct 23-24, 2000

Advisory Board:
Inter-American Photochemical Society, January 2000 – present (elected position)

Panel Review Committee:
"Small Business Innovative Research/Small Business Technology Transfer"
National Science Foundation, Arlington, VA September 14, 1999

Research Opportunities in Photovoltaics Workshop:
"Basic Research Opportunities in Photovoltaics"
National Renewable Energy Laboratory, Seattle, WA May 3, 1999

Panel Review Committee:
"Research Opportunities in Photochemical Sciences"

Department of Energy Workshop, Estes Park, CO February 5-8, 1996

Presentations:

Invited Presentations:

Argonne National Lab, Argonne IL
BP Solar, Taona VA
Brookhaven National Laboratory, Upton NY
California Institute of Technology, Pasadena CA
Case Western Reserve University, Cleveland OH
City College of New York, New York, NY
Catholic University of America, Washington DC
Colorado State University, Fort Collins CO
Drexel University, Philadelphia PA
Eastern College, St. David's PA
George Washington University, Washington DC
Georgetown University, Washington DC
Johns Hopkins University, Baltimore MD
Lincoln University, Lincoln PA
Los Alamos National Lab, Los Alamos NM
Lund University, Lund Sweden
Michigan State University, East Lansing MI
Muhlenburg College, Allentown, PA
National Renewable Energy Laboratory, Golden CO
National Institute of Standards, Gaithersburg MD
North Carolina State University, Raleigh NC
Naval Research Laboratories, Washington DC
Ohio State University, Columbus OH
Penn State University, College Station PA
Pittsburgh Paint & Glass, Pittsburgh PA
Polysciences Inc., Warrington PA
Princeton University, Princeton NJ
Roger Williams University, Bristol RI
Rohm & Haus, Philadelphia, PA
Rutgers University, Newark NJ
Rutgers University, New Brunswick NJ
St. Mary's College, St. Mary's MD
Stockholm University, Stockholm Sweden
SUNY-Binghamton, Binghamton NY
Temple University, Philadelphia PA
3M Company, St. Paul MN
Towson University
Tulane University, New Orleans LA
University of Alabama, Birmingham AL
University of California, Berkeley CA
University of California, Los Angelos CA
University of California, San Diego CA
University of California, Santa Barbara CA
University of Ferrara, Ferrara Italy
University of Maryland, Baltimore County
University of Maryland at Baltimore
University of Maryland, College Park MD
University of North Carolina, Chapel Hill NC
University of Pennsylvania, Philadelphia PA
University of Rochester, Rochester NY
University of South Carolina, Columbia SC
University of Texas, Houston TX
University of West Virginia, Morgantown WV
University of Wisconsin, Madison WI
University of Wyoming, Laramie WY
Uppsala University, Uppsala Sweden
Washington University, St. Louis MO
Wayne State University, Detroit MI
William Paterson University, Wayne NJ

Invited Presentations at Professional Meetings (1998 →):

224th National A.C.S. Meeting, Boston, MA 2002 (August 17, 2002)
Development of Molecular Catalysts for Dehalogenation of Some EPA Contaminant List Compounds

Gordon Research Conferences: Electron Donor-Acceptor Interactions, Newport, RI (August 16, 2002)
MolecularDyads Anchored to Nanocrystalline Semiconductor Interfaces

IX Encuentro de Quimica Inorganica, Santiago Chile, (July 31, 2002)
Environmental Chemistry Driven by the Sun

2002 NSF Inorganic Chemistry Workshop, Santa Fe, NM (April 28, 2002)
"Solar Energy Conversion with Inorganic Coordination Compounds Anchored to Nanocrystalline Inorganic Materials"

Photoreaction Control and Photofunctional Materials (PCPM02), Tsukuba, Japan (March 20, 2002)
Molecular Control of Photo-Induced Electron and Energy Transfer at Nanocrystalline Semiconductor Interfaces

Gordon Research Conferences: Organic Photochemistry, New London, CT (July 16, 2001)

Electron-, Energy-, and Ligand-Transfer Reactions from Copper Diimine Excited States

23rd DOE Solar Photochemistry & Photochemistry Research Conference, Granilakken, CA (June 6, 2001) *Electron Transfer in Efficient Molecular Solar Cells*

Invited Presentations at Professional Meetings (Continued):

Inorganic Chemistry Into the New Millenium, Santa Fe, NM (May 17, 2001)
Electron Transfer Dynamics in Efficient Molecular Solar Cells

221st National ACS Meeting, San Diego CA (April 5, 2001)
Symposium Entitled: Molecules as Components in Devices
Supramolecular Components in Photovoltaic Devices

199th Meeting of the Electrochemical Society, Washington DC (March 26, 2001)
New Approaches for Energy Conversion at Sensitized Electrodes

Gordon Research Conferences: Inorganic Reaction Mechanisms, Ventura, CA (February 26, 2001)
Reaction Mechanisms of Molecular Excited States Bound to Semiconductor Surfaces

13th Conference on Photochemical Conversion and Storage of Solar Energy (IPS-2000), Snowmass, CO (August 3, 2000) *Molecular Aspects of Interfacial Electron Transfer*

11th Inter-American Photochemical Society, Clearwater, FL (January 6, 2000)
TiO_2 Sensitization from Ground and Excited States

United States-Japan Workshop entitled: "Photoconversion and Photosynthesis: Past, Present and Future Prospects", Okazaki, Japan (November 17, 1999) *Applications of Dye-Sensitized Photoelectrochemical Cells*

13th International Symposium on Photochemistry & Photophysics of Coordination Compounds (ISPPCC XIII), Isle of Lipary, Italy (June 29, 1999) *"Gated" Electron Transfer through Large Structural Barriers*

23rd Department of Energy Solar Photochemistry & Photochemistry Research Conference, Granilakken, CA (June 7, 1999) *Competitive Intermolecular Energy and Interfacial Charge Transfer at Interfaces*

195th Meeting of the Electrochemical Society, Seattle, WA (May 2-7, 1999)
Symposium entitled: Nanoscopic Materials for Energy Conversion.
Excited State Deactivation of Ru(II) Chromophores on Nanocrystalline Titanium Dioxide Thin Films

217th National A.C.S. Meeting, Anaheim, CA (March 21-25, 1999)
Symposium entitled: Dynamics and Structure at Electrochemical Interfaces: New Spectroscopic Approaches.
Interfacial Charge Recombination from Nanocrystalline Titanium Dioxide to Rhenium Sensitizers

217th National A.C.S. Meeting, Anaheim, CA (March 21-25, 1999)
Symposium entitled: Physical Chemistry of Sol-Gel Materials.
Stabilization of Ru(II) Polypyridyl Compounds in Mesoporous Sol-Gel Processed Titanium Dioxide Films

194th Meeting of the Electrochemical Society, Boston, MA (November 4, 1998)
Symposium entitled: Photoelectrochemistry and Solar Energy Conversion.
Photoinduced Electron Transfer at Sensitized Titanium Dioxide Interfaces

The 25th Conference of the Federation of Analytical Chemistry and Spectroscopy, Austin, TX (October 12, 1998) *Photoelectrochemistry of Nanocrystalline Titanium Dioxide Assemblies*

12th Conference on Photochemical Conversion and Storage of Solar Energy, Berlin, Germany (August 10, 1998) *An Alternative Mechanism for Dye Sensitization of Wide Bandgap Semiconductors*

22nd Department of Energy Solar Photochemistry Research Conference, Chantilly, VA (June 8, 1998)
Electron Transfer Dynamics in Efficient Molecular Solar Cells

Binghamton Section of the American Chemical Society, Binghamton, NY (May 7, 1998)
Molecular Light-to-Electricity Energy Conversion

Interagency Advanced Power Group Meeting Renewable Energy Workshop, Washington DC (April 15, 1998)
Molecular Photovoltaic Cells

215th National A.C.S. Meeting, Dallas, TX (April 1, 1998)
Symposium entitled: Nanostructured Materials and Electrochemistry.
Charge Transfer, Recombination and Transport in Nanocrystalline Titanium Dioxide Films, COLL 233

10th Inter-American Photochemical Society, Clearwater, FL (January 4, 1998)
Tuning Light-to-Electrical Energy Conversion Efficiencies with Heteroleptic Coordination Compounds