PHYSICAL ELECTROCHEMISTRY DIVISON (PED) NEWSLETTER

February, 2001

Division Website: www.electrochem.org/divisions/physelect.html

Division Officers

Chair: Dr. Andrzej Wieckowski, andrzej@scs.uiuc.edu

Vice-Chair: Dr. Johna Leddy, jleddy@blue.weeg.uiowa.edu

Secretary-Treasurer: Dr. Viola Birss, birss@ucalgary.ca

Members-at-Large:
Dr. Gessie Brisard, gessie.brisard@courrier.usherb.ca
Dr. Dan Buttry, buttry@uwyo.edu
Dr. Maggie Ciszkowska, malgcisz@brooklyn.cuny.edu
Dr. Zoltan Nagy, nagy@anl.gov
Dr. Marc Porter, mporter@porter1.ameslab.gov

Advisor to the PED: Dr. K. Niki, kniki@xenon.che.ilstu.edu

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Recent Activities

Symposia

During 2000, the PED sponsored or co-sponsored 6 symposia at the Spring Meeting in Toronto, and 6 symposia in Phoenix in the fall (see pages 5-7 for a listing of symposia sponsored by our division over the last five years).

Student Travel Awards

Fall Phoenix Meeting

Student travel grants of $300 each were awarded to Dmitri Brevnov (H.Finklea), Univ. of West Virginia; Mohammed Ghanem (P. Bartlett), Univ. of Southampton; Jocelyn Hicks (R. Murray), Univ. of North Carolina; Ionel Stefan (D. Scherson), Case Western Reserve Univ.; Joo-Hwan Sung (K.-H. Lee), Pohang Univ. in South Korea. (See photo page 2)

We intend to honor our Student Travel Awardees by including their photos in the PED newsletter and on the PED website.

In the News

The December 4, 2000 issue of C&E News, published by the American Chemical Society, featured an article entitled "Chemistry On All Sorts of Electrodes" which covered the research that was presented at the Fall ECS meeting in Phoenix. As, an example, Dan Scherson's research on x-ray absorption studies of ruthenium dioxide was highlighted, work presented in our New Horizons in Spectroelectrochemistry & Photoelectrochemistry symposium.

Andrzej Wieckowski (center) pictured with the PED Student Travel Award Winners (supervisors names in parentheses) for Phoenix, from left: Ionel Stefan (D. Scherson), Case Western Reserve Univ.; Mohammed Ghanem (P. Bartlett), Univ. of Southampton; Jocelyn Hicks (R. Murray), Univ. of North Carolina; Dmitri Brevnov (H.Finklea), Univ. of West Virginia.
Missing: Joo-Hwan Sung (K.-H. Lee), Pohang Univ. in South Korea.

Upcoming Activities

Nominations for Division Officers

Following are the nominations for the PED Division Officers, which will be voted on at the PED Business Meeting Luncheon at the Washington, D.C. meeting on Monday March 26th at 12:15 pm in the Renaissance East, Ballroom Level.

Chair: Johna Leddy, Univ. of Iowa
Vice-Chair: Viola Birss, Univ. of Calgary
Secretary-Treasurer:
Gessie Brisard, Univ. of Sherbrooke
Robin McCarley, Louisiana State Univ.
Members-at-Large:
Daniel Buttry, Univ. of Wyoming
Malgorzata Ciszkowska, Brooklyn College, CUNY
Ingrid Fritsch, Univ. of Arkansas
Michael Mirkin, Queens College, CUNY
Zoltan Nagy, Argonne Nat'l. Lab
Marc Porter, Iowa State Univ.
Petr Vanysek, ACLARA Biosciences Inc.

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Division Finances

The Physical Electrochemistry Division provides funds to assist a few of the invited speakers at its symposia at each meeting. Our principal intent, however, is to offer travel grants as partial support for the attendance of graduate students at the annual conferences. At present, we normally only support to 4 or 5 students per conference (see guidelines for Graduate Student Travel Awards on the PED website). In order to enhance our ability to support student travel, the Division recently agreed to institute annual dues of $5.00 for each non-student member. If all members paid these dues, we would have sufficient funds to assist up to ten students per year to attend our meetings.

Therefore, we do need your financial support to fund these Divisional activities. Please ensure that you tick off the appropriate box (the last one under Divisional dues on the Membership Renewal or New Member form) and pay these divisional dues along with the Society dues. If you did already pay your Society dues, but overlooked the PED dues, you can still submit your payment to ECS, indicating that this is for the purpose of paying PED dues.❖

PED Awards

David C. Grahame Award

This award was established in 1981 to "encourage excellence in physical electrochemistry research." It is sponsored by General Electric and the Ford Foundation. The award winner is presented with a scroll and a cheque for $1500. A lecture is given in the General Session of the PED or in a PED sponsored symposium.

The 10th recipient of the David C. Grahame Award is Dr. Dan Scherson of Case Western Reserve University. Congratulations Dan! **An award reception will be held at 7:30 pm on Tuesday March 27th, 2001 in the Renaissance Ballroom East, Ballroom Level.**

The David C. Grahame Award is made every two years. We encourage nominations of appropriate individuals, who are currently active members of the Society, for the 2003 Award. Watch Interface or check out the ECS website at www.electrochem.org for details regarding the David C. Grahame Award.

Max Bredig Award

This award was established in 1984 to "recognize excellence in molten salt chemistry research." It is awarded biannually and is sponsored by ARCO Metals Company and the Aluminum Company of America. The award winner is presented with a scroll and a cheque for $1500. A lecture is given in the International Molten Salt symposium, sponsored by the PED.

The most recent recipient was Professor Yasuhiko Ito in 1999. He gave his award address, entitled "Selected Topics of Molten Salt Electrochemistry", at the Max Bredig Award Banquet at the Honolulu Meeting in October 1999.

Nominations are currently being sought for the Max Bredig Award. Watch Interface or check out the ECS website at www.electrochem.org for details regarding deadlines for nominations. ❖

Upcoming Activities, continued from p. 2

Division Luncheon/Business Meeting

We invite you to join us for the division luncheon/business meeting in Washington, D.C. on **Monday, March 26th at 12:15 pm in the Renaissance East, Ballroom Level**. Watch Interface or check out the ECS website at www.electrochem.org for further information. ❖

David C. Grahame Award Reception

A wine and cheese reception for the David C. Grahame Awardee, Dr. Dan Scherson, will be held at **7:30 pm on Tuesday March 27th, 2001 in the Renaissance Ballroom East, Ballroom Level.**

Future PED-Sponsored Symposia Plans

Following is a list of the symposia planned for the Spring and Fall conferences in 2001 and beyond. We hope that you can identify symposia in which you can participate. Also, we continue to need the input of our membership in terms of suggesting novel and appropriate symposia topics which the PED could sponsor. A list of recent symposium topics is also attached, so that duplication is avoided, but also to provide our members with ideas regarding suitable symposium topics. Contact any of the Officers listed on page 1, if you would like to suggest a symposium topic. You may wish to be involved in organizing the symposium as well, or you may prefer to suggest the names of other individuals who would be willing to serve as the symposium organizers. ❖

UPCOMING SYMPOSIA

WASHINGTON DC-March 25-30, 2001

C1 - DIRECT METHANOL FUEL CELLS
Co-sponsors: Battery Division/ Energy Technology Division/ Physical Electrochemistry Division
Organizers: S. Narayananan, S. Gottesfeld and T. Zawodzinski

D1 - POLYMER ELECTROLYTES FOR BATTERIES AND FUEL CELLS
Co-sponsors: Battery Division/ Physical Electrochemistry Division/ Energy Technology Division
Organizers: K.M. Abraham and T. Zawodzinski

L1 - ELECTRODEPOSITION OF NANOSCALE AND NANOPHASE MATERIALS II
Co-sponsors: Electrodeposition Division/ Physical Electrochemistry Division
Organizers: J.A. Switzer, and J.-L. Delplancke

L2 - MOLECULAR STRUCTURE OF THE SOLID-LIQUID INTERFACE AND ITS RELATIONSHIP TO ELECTRODEPOSITION III
Co-sponsors: Electrodeposition Division/ Physical Electrochemistry Division
Organizers: D.M. Kolb and R.C. Alkire

Y1 - INORGANIC TEMPLATES AS DESIGN ELEMENTS IN NANOCOMPOSITES AT ELECTRODE SURFACES
Organizers: A. Fitch and M.M. Collinson

Y2 - SYNCHOTRON RADIATION STUDIES OF ELECTROCHEMICAL SYSTEMS
Organizers: S.R. Conradson and S. Mukerjee

Y3 - PHYSICAL ELECTROCHEMISTRY GENERAL SESSION
Organizers: J. Leddy

Z1 - ELECTRODES BASED ON CONDUCTING POLYMERS
Co-sponsors: Physical Electrochemistry Division/ Battery Division
Organizers: J. Farraris, D. Belanger, V. Birss, J. Prakas and G. Nagasubramanian

AA1 - ELECTRODE ARRAYS AND COMBINATORIAL ELECTROCHEMISTRY
Co-sponsors: Physical Electrochemistry Division /Sensor Division/ Luminescence and Display Materials Division
Organizers: J. Stetter, D.A. Buttry, E.S. Smotkin and J.M. Pope

SAN FRANCISCO-September 2-7, 2001

C1 - FUEL CELLS AND CONDUCTING POLYMERS (Molten Carbonate Fuel Cells; Electronically and Ionically Conducting Polymers; Low Temperature Fuel Cells; Systems Integration in Electric Vehicles)
C-osponsors: ECS Battery Division/ ECS Energy Technology Division/ ECS High Temperature Materials Division/ ECS Industrial Electrolysis and Electrochemical Engineering Division/ ECS Physical Electrochemistry Division/ ISE Electrochemical Energy Conversion Division/ ISE Electronically and Ionically Conducting Phases Division/ ISE Industrial Electrochemistry
and Electrochemical Engineering Division
Organizers: T. Zawodzinski, J. Leddy, M. Mastragostino, T.V. Nguyen, J.R. Selman, D.A. Shores, U. Stimming, M. Vorotyntsev, M. Watanabe

G1 - CHEMICAL AND BIOLOGICAL SENSORS AND ANALYTICAL METHODS (Chemical Sensors; Biosensors, Biomolecular and Biomimetic Devices; Microelectrodes and Arrays in Electroanalytical Chemistry)
Co-sponsors: ECS Sensor Division/ ECS Physical Electrochemistry Division/ ECS Organic and Biological Electrochemistry Division/ ISE Analytical Electrochemistry Division/ ISE Bioelectrochemistry Division
Organizers: P. Vanysek, M. Aizawa, M.A. Butler, E.J. Calvo, W.R. Heineman, R.A. Hillman, T. Matsue, J.W. Schultze, J.R. Stetter, N. Yamazoe

H1 - INTERFACIAL STRUCTURE, KINETICS AND ELECTROCATALYSIS (Double Layer Modeling and Experiments; Surface Structure and Reactivity)
Co-sponsors: ECS Physical Electrochemistry Division/ ISE Interfacial Electrochemistry Division
Organizers: J. Lipkowski, R.R. Adzic, J. Feliu, O. Petrii, P.N. Ross, Jr., H.S. White

I1 - SEMICONDUCTOR- AND PHOTO-ELECTROCHEMISTRY (Photoelectrochemistry and Solar Enery Conversion and Storage; Sustainable Renewable Energy Systems; Electrode Materials and Processes for Energy Conversion and Storage)
Co-sponsors: ECS Energy Technology Division/ ECS Industrial Electrolysis and Electrochemical Engineering Division/ ESC Physical Electrochemistry Division/ ECS Battery Division/ ISE Interfacial Electrochemistry Division/ ISE Electrochemical Energy Conversion Division
Organizers: M.E. Orazem, V. Kapur, N.S. Lewis, R.D. McConnell, Y. Nosaka, B.A. Parkinson

J1 - BIOELECTROCHEMISTRY AND ORGANIC ELECTROCHEMICAL REACTIONS (Electron Transfer Reactions in Biological Systems; Mechanistic Organic and Organometallic Electrochemistry; Advances in Electroorganic Synthesis; Applications of Electrochemistry in Electrophysiology and Medical Therapy)
Co-sponsors: ECS Organic and Biological Electrochemistry Division/ ECS Physical Electrochemistry Division/ ECS New Technology Subcommittee/ ISE Bioelectrochemistry Division/ ISE Molecular Electrochemistry Division/ ISE Interfacial Electrochemistry Division
Organizers: J. Lessard, D.H. Evans, J. Heinze, F. Maran, K. Niki, H. Sumi, I. Taniguchi, J. Ulstrup, R.M. Wightman

PHILADELPHIA-May 12-17, 2002
ECS Centennial Meeting

A1 - GENERAL SOCIETY STUDENT POSTER SESSION
Co-sponsors: All Divisions and Groups
Organizers: TBA

A2 - NANOTECHNOLOGY
Co-sponsors: All Divisions and Groups
Organizers: TBA

AE2 – INORGANIC TEMPLATES AS DESIGN ELEMENTS IN NANOCOMPOSITES AT ELECTRODE SURFACES
Organizers: TBA

AE3- PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART #1 - HISTORICAL PERSPECTIVES
Organizers: TBA

AE4- PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART #2 - NEW DEVELOPMENTS IN ELECTROANALYTICAL METHODS
Organizers: TBA

AE5- PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART #3 - NEW DEVELOPMENTS IN OPTICAL METHODS
Organizers: TBA

AE6- PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART #4 - NEW DEVELOPMENTS IN UHV AND X-RAY METHODS
Organizers: TBA

AE7- PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART #5 - NEW DEVELOPMENTS IN IN-SITU SURFACE SCANNING METHODS
Organizers: TBA

AE8- PHYSICAL ELECTROCHEMISTRY GENERAL SESSION
Organizers: TBA

AF1- REDUCTIVE ELECTROCATALYSIS
Co-sponsors: Physical Electrochemistry and Organic/Biological Electrochemistry
Organizers: TBA

AG1- MICROANALYTICAL DEVICES AND INSTRUMENTATION
Co-sponsors: Physical Electrochemistry/Organic and Biological Electrochemistry/ EnergyTechnology
Organizers: TBA

AH1- CHEMICALLY MODIFIED ELECTRODES
Co-sponsors: Physical Electrochemistry/ Organic and Biological Electrochemistry/ Sensor
Organizers: TBA

C1 – ELECTROCHEMICAL CAPACITORS FOR HYBRID BATTERY AND POWER SOURCES
Co-sponsors: Battery/Energy Technology/Physical Electrochemistry
Organizers: TBA

C2 – NANOMATERIALS FOR BATTERY FUEL CELLS
Co-sponsors: Battery/Energy Technology/Physical Electrochemistry
Organizers: TBA

R1 – ADVANCED MATERIALS FOR ENERGY CONVERSION AND STORAGE
Co-sponsors: Energy Technology/ Battery/Physical Electrochemistry
Organizers: TBA

PREVIOUS SYMPOSIA SPONSORED BY THE PED

Codes for Divisions - Numbers in () are the number of symposia co-sponsored with PE since the 187th Meeting:

BAT - Batteries (9)
COR - Corrosion (8)
DST – Dielectric Science and Technology (1)
ED - Electrodeposition (10)
ELE – Electronics (1)
ETD - Energy Technology Division (19)
HTM - High Temperature Materials (6)
IEE - Industrial Electrolysis & Electrochemical Engineering (2)
OBE – Organic & Biological Electrochemistry(5)
PED – Physical Electrochemistry
SEN - Sensors (11)

RENO - 187 - Spring 1995

1. Direct Electrochemical Oxidation of Methanol and Small Organic Molecules III
2. Surface Processes for Energy Applications II **3.** Kinetics of Interfacial Charge Transfer Processes III
4. X-Ray Adsorption Fine Structure (XAFS)
5. Optical Studies of Thin Films
6. Anodic Processes: Fundamentals and Practical Aspects
7. Liquid-Liquid Interfaces
8. Physical Electrochemistry General Session

CHICAGO - 188 - Fall 1995

1. Solar Energy Conversion and Other Photoelectrochemical Processes Based on Solid/Liquid Interfaces
2. Fundamental and Applied Surface Studies of Two Dimensional Metal Chalcogenide Materials
3. First International Symposium on Proton Conducting Membrane Fuel Cells
4. Organic Monolayers Supported on Electrode Surfaces
5. Scanning Probe Microscopy for Electrode Characterization and Nanometer Scale Modification
6. Oxygen Electrochemistry
7. Physical Electrochemistry General Session

LOS ANGELES -189 - Spring 1996

N1 - Electrocatalysis at Elevated Temperatures
S1 - New Directions in Electroanalytical Chemistry
S2 - Sixth International Symposium on Electrode Processes
T1 - Tenth International Symposium on Molten Salts
S3 - Physical Electrochemistry General Session

SAN ANTONIO - 190 - Fall 1996

F1 - Surface Oxide Films
K1 - Electrochemically Deposited Thin Films III
Q1 - Electrochemical Capacitors
Y1 - Intercalation, Insertion Compounds and Processes and Their Applications
Z1 - Chemically Modified Electrodes - Intelligent Design and Structure
AB1 - Acoustic Wave Based Sensors
AC1 - Applications of Neural Networking and Fuzzy Logic
X1 - Physical Electrochemistry General Session

MONTREAL - 191 - Spring 1997

E1 - Interfacial Processes in Corrosion Processes
I1 - Third International Symposium on In Situ Characterization of Electrodeposition Processes
L1 - Electrode Materials and Processes for Energy Conversion and Storage IV
W1 - Electrochemical Double Layer Symposium Commemorating 50 Years of D.C. Grahame's Ground Breaking Paper
W2 - Processes in Polymers and at Polymer Metal Interfaces
X1 - Electrochemical Surface Science of Hydrogen Adsorption on and Absorption into Metal, Alloys, and Intermetallics
W3 - Physical Electrochemistry General Session

PARIS -192 - Fall 1997

F1 - Chemical and Biological Sensors and Analytical Electrochemical Methods
G1 - Interfacial Structure, Kinetics, and

Electrocatalysis

H1 – Photoelectrochemistry
I1 - Bioelectrochemistry and Organic Electrochemical Reactions and Conducting Polymers

SAN DIEGO - 193 - Spring 1998
H1 - Processing Structure Property Relationships in Electrochemically Prepared Materials
W1 - Electrochemistry in Unusual Media and Under Unusual Conditions
V1 - SECM and Submicron Electrochemistry
X1 - Molten Salts XI
Z1 - Liquid/Liquid Interfaces
V2 - Physical Electrochemistry General Session

BOSTON -194 - Fall 1998
M1 - Molecular Structure of the Solid Liquid Interface and its Relationship to Electrodeposition II
M2 - Electrodeposition of Nanoscale and Nanophase Materials
R1 - Photoelectrochemistry and Solar Energy Conversion
W1 - Molecular Functions of Electroactive Thin Films
X1 - Second International Symposium on Proton Conducting Membrane Fuel Cells
Z1 - Acoustic Wave based Sensors
W2 - Physical Electrochemistry General Session

SEATTLE - 195 - Spring 1999
C1 - Corrosion and Prevention in Air and Spacecraft
R1 - Modeling of Processes at Electrochemical Interfaces and in Electrochemical Systems
S1 - Spectroscopic Tools for Analysis of Electrochemical Systems
U1 - New Directions in Electroanalytical Chemistry
U2 - Single Crystal and Nanostructured Electrodes

HONOLULU-196/Joint with Electrochemical Society of Japan - Fall 1999
X1 - Electrocatalysis
Y1 - Electrochemistry of Ordered Interfaces
Z1 - Twelfth International Symposium on Molten Salts
N1 - Photoelectrochemistry, Photocatalysis, and Photoactive Materials
V2 - Electroorganic and Electroanalytical Aspects of Environmental Chemistry
H1 - Sixth International Symposium on Diamond Materials
W2 - General Session

TORONTO -197- Spring 2000
M1 – Applications of Surface Science to Energy Technologies
V2 – Hydrogen at Surfaces and Interfaces
V3 – Organic Monolayers at Electrodes
V4 – Physical Electrochemistry General Session
W1 – Electrochemistry of Novel Electrode Materials
Z1 – Electrochemical Impedance for Analysis of Chemical and Electrochemical Processes and Mechanisms

PHOENIX -198- Fall 2000
A2 – Electrochemistry vs. The Global Climate Change: A Coordinated Response
K1 - Electrochemical Science and Technology of Copper
P1 - Physical Electrochemistry General Session
Q1 - Electrochemistry of Carbon Electrodes
R1 - New Horizons in Spectroelectrochemistry and Photoelectrochemistry
S1 - Scanning Probe Microscopy for Electrode Characterization and Nanometer Scale Modification