

# The Physical Electrochemistry Division

by Johna Leddy

**T**he most irresistible question in science is why. And why is the domain of physical electrochemistry. Physical electrochemistry pervades and buttresses all thoughtful evolution of ideas, methods, and theory in electrochemistry and electrochemical engineering. Unlike other ECS Divisions, Physical Electrochemistry is not focused on a particular technology or class of materials, but on the fundamental ideas of why nature works as it does and how those ideas can be applied to electrochemical systems.

Historically, the Physical Electrochemistry Division has encompassed a wide variety of interests: the traditional domains of kinetics, thermodynamics, and transport; the fundamentals of double layer and electron transfer theories; methodologies of spectroscopy and imaging; modeling by molecular dynamics and explicit simulations; electroanalysis; and technologies such as fuel cells and batteries. The first feature article in this issue of *Interface*, (pages 22-44), highlights some of these interest areas. Ron Fawcett provides an update on double layer effects. Robert Forster reviews recent developments in electron transfer theory. Modeling methods, with particular emphasis on recent advances in molecular dynamics calculations as applied to electrochemical systems, are summarized by Mike Philpott. Mike Weaver and Sally Wasileski outline applications of spectroscopic methodology (UHV and *in situ* methods) to electrochemical systems. Lou Coury explicates exciting advancements in electroanalysis. Architectures on electrodes are also discussed. The timely and enthusiastic response of these authors is greatly appreciated. The second feature article by Peter Strasser (pages 46-51) examines the fascinating spatio-temporal patterns generated in some electrochemical systems.

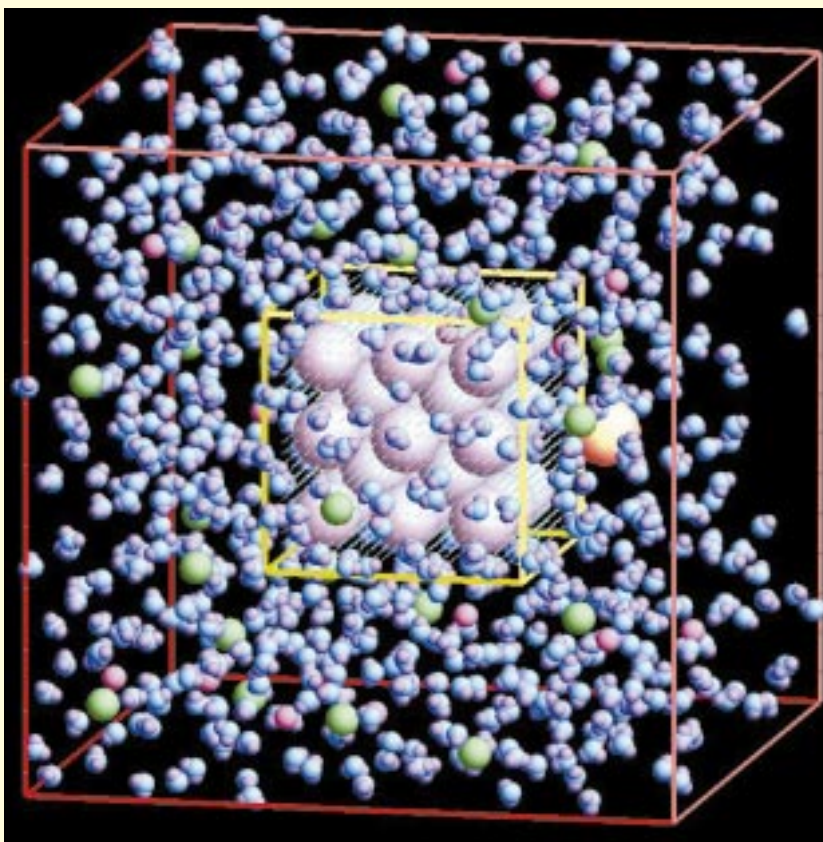
The breadth of the Physical Electrochemistry Division is exemplified by the wide range of its re-occurring symposia, including electrocatalysis, electrode materials, molten salts, electroanalysis, and unusual media. The synergy of Physical Electrochemistry with the other Divisions is apparent from the numerous symposia cospon-

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## *Our Featured Division*

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## Our Featured Division

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sored by Physical Electrochemistry during the last five years; joint symposia have been held with all Divisions except Dielectric Science and Technology, Electronics, and Luminescence and Display Materials. That Physical Electrochemistry pervades all areas of interest to the members of ECS is notable from Society statistics. There are 7500 members of ECS, of whom slightly more than a third claim membership in the Physical Electrochemistry Division.

Support of symposia and travel grants accounts for 90% of Divisional expenses. The Division has sustained a strong interest in encouraging students by providing travel assistance and Society memberships. At each meeting, several students receive travel awards of up to \$500. The resources to support students and invited speakers are garnered through the publication of symposium volumes and the collection of divisional dues (\$5). The efforts of symposium organizers and the speakers who submit papers to symposium volumes are greatly appreciated. The honoraria for the Grahame Award in Physical Electrochemistry and the Bredig Award in Molten Salt Chemistry have been

increased. Dan Scherson will receive the Grahame Award at the spring meeting and Yasuhiko Ito received the Bredig Award in 1999. As a complement to the Bredig Award dinner, informal receptions are planned for future Grahame awardees.

The executive committee of the Division works diligently to expend Divisional resources in a best effort to promote the interests of the Division. Input to the executive committee regarding Divisional interests and symposium topics are greatly appreciated. Please contact members of the executive committee and attend the Divisional luncheons at the spring meeting to express your interests. ■

## Acknowledgments

The excellent contributions of the authors and the patience and guidance of Mary Yess and Krishnan Rajeshwar are most gratefully acknowledged.

## About the Author

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## The Physical Electrochemistry Division • Future Symposia Plans

Washington, DC – March 2001

*Direct Methanol Fuel Cells* (co-sponsored by the Battery and Energy Technology Divisions); *Polymer Electrolytes for Batteries and Fuel Cells* (co-sponsored by the Battery and Energy Technology Divisions); *Electrodeposition of Nanoscale and Nanophase Materials II* (co-sponsored by the Electrodeposition Division); *Molecular Structure of the Solid-Liquid Interface and Its Relationship to Electrodeposition III* (co-sponsored by the Electrodeposition Division); *Bioelectroanalytical Chemistry* (co-sponsored by the Organic and Biological Electrochemistry and Sensor Divisions); *Inorganic Templates as Design Elements in Nanocomposites at Electrode Surfaces*; *Synchrotron Radiation Studies of Electrochemical Systems* (co-sponsored by the Corrosion Division); *Electrodes Based on Conducting Polymers* (co-sponsored by the Battery and Energy Technology Divisions); and *Electrode Arrays and Combinatorial Chemistry* (co-sponsored by the Sensor and Luminescence and Display Materials Divisions).

San Francisco, CA – September 2-7, 2001

*Fuel Cells and Conducting Polymers* (co-sponsored by the Battery, Energy Technology, High Temperature Materials, and Industrial Electrolysis and Electrochemical Engineering Divisions); *Chemical and Biological Sensors and Analytical Methods* (co-sponsored by the Sensor, and Organic and Biological Divisions); *Interfacial Structure, Kinetics, and Electrocatalysis*; *Semiconductor- and Photo-Electrochemistry* (co-sponsored by the Energy Technology, Industrial Electrolysis and Electrochemical Engineering, and the Battery Divisions); *Bioelectrochemistry and Organic Electrochemical Reactions: Electron-Transfer Reactions in Biological Systems* (co-sponsored by the Organic and Biological Division and the New Technology Subcommittee); *Bioelectrochemistry and Organic Electrochemical Reactions: Mechanistic Organic and Organometallic Electrochemistry* (co-sponsored by the Organic and Biological Division and the New Technology Subcommittee); *Bioelectrochemistry and Organic Electrochemical Reactions: Advances in Electro-Organic Synthesis* (co-sponsored by the Organic and Biological Division and the New Technology Subcommittee); and *Bioelectrochemistry and Organic Electrochemical Reactions: Applications of Electrochemistry in Electrophysiology and Medical Therapy* (co-sponsored by the Organic and Biological Division and the New Technology Subcommittee).

(Note: The San Francisco meeting is a joint meeting with the International Society of Electrochemistry and all sessions are jointly sponsored by ISE Divisions.)