



**Published by:**  
The Electrochemical Society (ECS)  
65 South Main Street  
Pennington, NJ 08534-2839, USA  
Tel 609.737.1902  
Fax 609.737.2743  
www.electrochem.org

**Editor:** Krishnan Rajeshwar, rajeshwar@uta.edu

**Contributing Editors:** Donald Pile, donald.pile@gmail.com; Zoltan Nagy, nagy.z@email.unc.edu

**Managing Editor:** Mary E. Yess, mary.yess@electrochem.org

**Production & Advertising Manager:**  
Dinia Agrawala, interface@electrochem.org

**Advisory Board:** Nancy Dudney (*Battery*), Barbara Shaw (*Corrosion*), Durga Misra (*Dielectric Science and Technology*), Lili Deligianni (*Electrodeposition*), George K. Celler (*Electronics and Photonics*), S. R. Narayan (*Energy Technology*), Prashant V. Kamat (*Fullerenes, Nanotubes, and Carbon Nanostructures*), Jeff Fergus (*High Temperature Materials*), Venkat Srinivasan (*Industrial Electrochemistry and Electrochemical Engineering*), Cornelis R. Ronda (*Luminescence and Display Materials*), Albert Fry (*Organic and Biological Electrochemistry*), Wesley Henderson (*Physical and Analytical Electrochemistry*), Peter Hesketh (*Sensor*)

**Publication Committee Chair:** Subhash Singhal

**Society Officers:** Paul Natishan, *President*; William D. Brown, *Vice-President*; Esther Takeuchi, *Vice-President*; Fernando Garzon, *Vice-President*; Johna Leddy, *Secretary*; John R. Susko, *Treasurer*; Roque J. Calvo, *Executive Director*

Statements and opinions given in The Electrochemical Society *Interface* are those of the contributors, and ECS assumes no responsibility for them.

Authorization to photocopy any article for internal or personal use beyond the fair use provisions of the Copyright Act of 1976 is granted by The Electrochemical Society to libraries and other users registered with the Copyright Clearance Center (CCC). Copying for other than internal or personal use without express permission of ECS is prohibited. The CCC Code for The Electrochemical Society *Interface* is 1064-8208/92.

**Canada Post:**

Publications Mail Agreement #40612608  
Canada Returns to be sent to:  
Bleuchip International, P.O. Box 25542,  
London, ON N6C 6B2

**ISSN**

Print: 1064-8208  
Online: 1944-8783

The Electrochemical Society *Interface* is published quarterly by The Electrochemical Society (ECS), at 65 South Main Street, Pennington, NJ 08534-2839 USA. Subscription to members as part of membership service; subscription to nonmembers is available; see the ECS website. Single copies \$8.00 to members; \$16.00 to nonmembers. © Copyright 2010 by The Electrochemical Society. Periodicals postage paid at Pennington, New Jersey, and at additional mailing offices. POSTMASTER: Send address changes to The Electrochemical Society, 65 South Main Street, Pennington, NJ 08534-2839.

The Electrochemical Society is an educational, nonprofit 501(c)(3) organization with more than 8000 scientists and engineers in over 70 countries worldwide who hold individual membership. Founded in 1902, the Society has a long tradition in advancing the theory and practice of electrochemical and solid-state science by dissemination of information through its publications and international meetings.



## Electrochemistry, Solid-State Science/Technology, and Health Care

After the powder settles down on the wintry slopes around Vancouver and the Olympic Games, the 217<sup>th</sup> ECS Meeting will roll into town in April 2010. One of the many fine symposia to be scheduled at this

meeting that caught my attention was “Electrochemistry in Medicine and Biomedical Applications” (C1). This topic especially hit very close to home by a recent personal and lifestyle-altering experience I had in December 2009: a heart attack or myocardial infarction. A cardiac stent was put in my heart as a result (more on stents a little later in this column). It turns out that ECS has a long history of supporting symposia on the role of electrochemistry in biology and medicine. As far back as in 1955, a symposium on precisely this topic was held in New York and a proceedings volume grew out of the discussions at this forum. More recently, I was personally involved as a co-organizer of a symposium sponsored by the New Technology Subcommittee entitled, “Electrochemistry and Solid-State Science and Technology in the Service of Medicine” (see *Interface*, Vol. 9, No. 3, fall 2000). A quick glance through the back issues of this magazine serves to underline the many important contributions that ECS members have made in medicine and health care; this obviously includes the corporate membership also.

It is worth noting that these contributions come from all the Technical Divisions of the Society. Rather obvious candidates in this list of Divisions include Organic and Biological Electrochemistry, Battery, and Sensor. However, important biomedical advances are also accruing from membership localized, for example, in Physical & Analytical Electrochemistry and Energy Technology (e.g., neurochemical imaging and biofuel cells); Corrosion (e.g., biocompatibility of implant materials); and Fullerenes, Nanotubes, and Carbon Nanostructures (e.g., cancer therapy and controlled drug release). Metal stents facilitate the opening of arteries and stem the adverse effects of plaque deposition on arterial walls (atherosclerosis). They represent a core business of at least one major corporate sponsor of the ECS of which I was aware. I was intrigued to learn from Mary Yess, Managing Editor of *Interface*, about an electrodeposited composite coating on nitinol stents developed by a very recent collaborator of mine in a book chapter project on electrodeposition, Mordechai Schlesinger (See *Interface*, Vol. 12, No. 3, fall 2003, p. 20). Nitinol (it is a bimetallic alloy and the acronym stands for nickel titanium naval ordinance laboratory) is a rather amazing material, but that is another story. The aforementioned coating serves multiple functions of drug release, corrosion prevention, and radio opacity; you can read about it in a column penned by another ECS member, Bob Rapp in *Materials Today* (Vol. 7, May 2004, p. 13). In my own case, the cardiologist chose to use a non-drug coated metal stent for various reasons.

The city of Bologna in Italy may justifiably be regarded as the birthplace of bioelectrochemistry. This is where Luigi Galvani did his famous experiments on the effect of static electricity on a frog's leg. This was a serendipitous discovery, as it turns out, and Galvani's investigations, we now know, led to the invention of the battery. The battery was not invented by Galvani himself but by his associate, Alessandro Volta, who (unlike Galvani) reasoned that “animal electricity” did not originate as a fluid within the frog's body. Volta's research led to an early version of the battery or a “voltaic pile.” It is entirely apt that these two pioneers are now honored by the technical terms “galvanic” and “voltaic,” and by the unit name for voltage (volt). Indeed, bioelectrochemistry has evolved into a powerful discipline in its own right and has spawned life-saving advances in diabetes management, therapeutic protocols/devices for treating brain disorders, and point-of-care cancer diagnostics. And I am now acutely aware (and thankful) of how far we have come in the management of heart disease and how electrochemistry and materials chemistry have contributed to these (and other) medical advances. Stay tuned.

Raj K.

**Krishnan Rajeshwar**  
Editor