The Hydrogen Society

On June 25, 2003 the United States and the European Union agreed to collaborate on the acceleration of the development of the "hydrogen economy." The U.S. government alone committed to spend $1.4 billion in new funding over the next five years to develop technologies to produce, store, and distribute hydrogen for use in fuel cell vehicles and in electricity generation. In this issue of *Interface*, the focus is on the topic of hydrogen, which is intimately connected to The Electrochemical Society; after all, fuel cells are electrochemical devices that convert the chemical energy of fuels (generally hydrogen) directly into electrical energy. The technical scope of ECS is very broad because of the different scientific disciplines encompassed by the subject of electrochemistry, and so we are an organization with many potentially different monikers including the Hydrogen Society.

The principle of fuel cells was developed by William Grove in 1839, but according to Sir Francis Bacon (the 1978 Vittorio de Nora Medalist) the expression "fuel cell" was not coined until after 1937. It has been around the Society for a long time, too. According to Perry and Fuller,[1] the earliest mention of the specific phrase "fuel cell" appeared in the ECS *Journal* in 1958, in a paper by R. Roberts [*J. Electrochem Soc.*, **105**, 428 (1958)]. Around 1900, scientists and engineers were predicting that fuel cells would be common for producing electricity and motive power within a few years. The development of new technologies runs in cycles, and according to applied energy science writer Ben Wiens, fuel cells are in about the fifth cycle of attempts to turn them into a commercially successful alternative energy source. In the past, these attempts often failed to the point where few companies continued development. Will research groups throughout the world be successful this time? According to Wiens, the "fifth wave" has advantages its predecessors did not have, including more advanced materials, and more incentive and support for this clean alternative energy source. We cannot forget to factor in the human component because mankind seems to advance itself in waves, and each time around it is possible to do things just a little bit better than in the past.[2]

> *"ECS will continue to facilitate the broad dissemination of information about many types of fuel cells, which will advance the science and technology, and improve the opportunity for the commercial viability of fuel cells in their fifth generation."*

The Society's activities certainly have supported the fifth wave of fuel cells. We have held numerous highly enlightening symposia and extensively published material on fuel cells during this fifth wave. No less than five ECS Divisions (Battery, Energy Technology, High Temperature Materials, Industrial Electrolysis & Electrochemical Engineering, and Physical Electrochemistry) have been actively involved in the area of fuel cell science and technology. At our fall 2004 meeting in San Antonio, Texas, the Board debated a proposal to start a Fuel Cell Group[3] in the Society. This has led to the formation of a Presidential Task Force whose mission it is to coordinate our current fuel cell activities and make recommendations about future development of this technical area in ECS.

I tend to be an ebullient prognosticator, but *Interface* Editor (Krishnan Rajeshwar) frowns upon my making any world-shaking predictions in this magazine. Consequently, I will avoid making statements about the success of the fifth wave and stick to what I know. I can comfortably predict that ECS will continue to facilitate the broad dissemination of information about many types of fuel cells, which will advance the science and technology, and improve the opportunity for the commercial viability of fuel cells in their fifth generation. Perhaps these advancements will in turn improve our lives and our planet's environment by leading to a worldwide renewable energy society based in part on hydrogen fuel. ■

Roque J. Calvo
Executive Director

1. M. L. Perry and T. F. Fuller, *J. Electrochem. Soc.*, **149**, S59 (2002).
2. B. Wiens, "The Future of Fuel Cells," May 3, 2002, http://www.benwiens.com/energy4.html.
3. An ECS Group is an organized technical area, which is typically approved by the Board of Directors when new and/or significant scientific areas emerge in electrochemistry. Group formation usually precedes the formation of a Division.