

Elton Cairns Biographical Information



Elton Cairns was born in Chicago, Illinois, and completed high school there. He then attended Michigan Technological University where he received B.S. degrees in chemistry and in chemical engineering, graduating at the top of his class. For graduate school, he attended the University of California, Berkeley, receiving a Ph.D. in chemical engineering in 1959. He joined the General Electric Research Laboratory in Schenectady, New York, where he worked on the proton exchange membrane (PEM) fuel cell, and developed the method for bipolar stacking of PEM fuel cells that is used today. These PEM fuel cells were used in the Gemini spacecraft, the first fuel cells in space. He also worked on direct hydrocarbon fuel cells and direct methanol fuel cells. In 1966, he joined Argonne National Laboratory, where he was responsible for R&D on molten salt batteries, including the Li/S and Li/FeS₂ cells. He also initiated the fuel cell program at ANL. In 1973, he became Assistant Department Head of the Electrochemistry Department at the General Motors Research Laboratories, where he was responsible for all of the battery and fuel cell R&D, including the development of Zn/NiOOH batteries for electric vehicles. In 1978 Cairns was appointed Associate Laboratory Director of Lawrence Berkeley National Laboratory (1978-96), Head of the Energy and Environment Division (1978-96), and Professor of Chemical Engineering, University of California, Berkeley (1978-). He initiated and headed the DOE battery and fuel cell programs there. Since 1978, more than 30 graduate students have performed their thesis research under his guidance. Eleven postdocs and 20 visiting scientists from around the world have performed research in his group. The research topics have included electrode kinetics, electrocatalysts for CO tolerance and direct methanol fuel cells, cathode materials for lithium ion cells, rechargeable Zn electrodes, alkaline electrolytes, rechargeable air electrodes, and modeling of electrochemical cells. Important in his research has been the development and application of new techniques, including X-ray absorption spectroscopy, solid state surface NMR, probe beam deflection spectroscopy. This work is documented in a book, over 230 journal articles, and 15 patents. His work has been recognized by various honors and awards, including the Melvin Calvin Medal of Distinction, (Michigan Technological University), the Michigan Technological University Academy of Sciences and Arts, Craig D. Hollowell Memorial Lecturer, Lawrence Berkeley National Laboratory, Warren McCabe Lecturer, North Carolina State University, R&D 100 Award (1992), American Institute of Chemists (Fellow), Fellow of The Electrochemical Society, Case Centennial Scholar Medal & Award, Case-Western Reserve University, The Croft Memorial Award and Lectureship, University of Missouri, IR-100 Award (1967), Francis Mills Turner Award, Electrochemical Society. Cairns has served as President (1989-90) and Vice President (1986-89) of The Electrochemical Society, Divisional Editor of The Journal of the Electrochemical Society (1976-87), and as an editor of *Electrochimica Acta* (1988 – 2004). He has also been very active in organizing symposia and meetings such as the Intersociety Energy Conversion Engineering Conferences, and the International Meeting on Lithium Batteries.

Memories of ISE Activities

My first memories of CITCE (later to become ISE) date back to 1967 and the Detroit meeting, which was organized by Seward Beacom and colleagues. I was very pleased to meet so many colleagues from other countries, and to exchange ideas with them. Since that time, I have missed only a few Annual Meetings. Each meeting brings new friends from other countries. I was very pleased to be active in the Electrochemical Energy Conversion Division of ISE, and served as its chair. During the years 1984-87, I served as Vice President, and as Chairman of the Organizing Committee for the Berkeley meeting in 1984, which took place on the campus of the University of California. A highlight of that meeting was a bus trip to the famous Napa Valley wine country, and a dinner at a fine winery.

During the 1990's and since, the ISE has been very active in transforming itself from a small, club-like organization into a truly international professional society with a firm organizational and business foundation. It has been a privilege to serve as president-elect (1997-98), president (1999- 2000), and past-president during

this time. We have had two joint meetings with The Electrochemical Society (1997, 2001), have established an Executive Secretary of the Society, have established a Society Office in Lausanne, Switzerland, an ISE web site with electronic voting, dues payment, and meeting registration capabilities, and have taken full financial responsibility for ISE Annual Meetings. The ISE Constitution and Bylaws have been updated and revised. A new Division Structure has been introduced. The Divisions now have their own funds for supporting symposia, and the Divisions are responsible for co-organizing the symposia at Annual Meetings.

The first meeting during my term as President was held in 1999 in Pavia, Italy. It marked the celebration of the 200th anniversary of the Volta Pile. (See the report of that meeting on this web site.) The first photo below shows Prof. John Bockris, who represented the founders of CITCE at that meeting. The meeting included a very interesting excursion to the Volta Museum in Como, Italy.

The Annual Meeting in 2000 was held in Warsaw, Poland, and was the first ISE meeting using Internet registration and fee payment. The full program was available on the web site, and the abstracts were distributed on CD's. The second photo below shows a view of the banquet, held in the very pleasant surroundings of the fine art of the John Paul II collection of 18th and 19th century paintings.



The ISE Pavia Banquet, 1999. Left to right: Elton Cairns (President), Miriam Cairns, John Bockris (representing the founding members of CITCE), and Erika Kalman, President-Elect.



The ISE Warsaw Banquet, 2000. Left to right: Rob Hillman, Secretary-General; Zofia Dunin-Borkowska, Vice President; Elton Cairns, President; Erika Kalman, President-Elect; Claude Deslouis, Vice President. Notice the fine art on the walls of the gallery housing the John Paul II collection of 18th and 19th century paintings.