## EDITORIAL

### The Expanding Frontiers of Electrochemistry

The fascinating field of electrochemistry has now many avenues leading to newer frontiers of modern science and technology. Electroplating of metals and alloys, formerly confined to protective and decorative purposes, now commands respect from semiconductor, printed circuit and microelectronics industries, and is paving the way to enter the arena of computers as magnetic memory cores. Many a metal is extracted and purified by electrolytic methods from aqueous, non-aqueous or molten electrolytes. Electrothermics has made a great impact on the industrial innovations. The import of the investigations aimed at combating corrosion and oxidation under a variety of environments is indeed beyond description. A day may come when the electrochemists in the battery field will have a sway over the oil monarchs: battery-powered automobiles are bound to be on the roads soon, leaving us a cleaner atmosphere to live in. Be it a primary battery or a storage device or fuel cells, porous electrodes are extensively used, and the field of porous electrodes is now gaining ground in efficient electrochemical energy conversion.

Electrochemists, along with solid-state physicists, have contributed much to the understanding of fluorescence and phosphorescence, and now comes the electroluminescent devices. There was a time when people predicted that semiconductor-based electroluminescent devices would prove a serious rival to conventional lamps in the field of general lighting. Although these initial predictions are not confirmed, they are already being used to an increasing extent as indicators and warning lights and for information display purposes. 'Electro-transport' is a phenomenon in which electron movement under a potential gradient brings about a continuous mass movement; this enhanced diffusion has been used to segregate impurities in a metal. 'Electroplasticity' is an effect comprising of spasomdic plastic deformations of metals occurring under the influence of short pulses of electric current; the pulses have no effect in the elastic region, but beyond this, sudden increases in strain, rising in intensity with the applied current, are observed on the tensile curves. These, along with the area of stress corrosion cracking, are the fields where metallurgists, metal physicists and electrochemists meet together, evolving a new era of 'electrophysics'.

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