This issue is dedicated to the late Dr. Panayotis Andricacos of the IBM Thomas J. Watson Research Center, who played a pioneering role in the development of copper electrodeposition for semiconductor on-chip wiring. The world's leading semiconductor companies are now using copper electrodeposition in the fabrication of six or more levels of wiring of their most advanced chips. We are very saddened by the death of Dr. Andricacos just prior to publication of this issue. He served as Guest Editor of its first group of papers; we are grateful for his efforts as well as those of Dr. Hariklia Deligianni, also of the Watson Research Center. The papers will provide the reader with a broadened perspective on the applicability of electrochemical technology to the field of microelectronics and a glimpse of its continuing role in advancing that field.