



Professor George Thompson, OBE, DSc, FREng (1946–2020)

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It is with deep sadness that we share the news that our dear friend and colleague, Professor George Edward Thompson, passed away after a long illness on the December 9, 2020. George was a towering presence in the light metal corrosion and protection field over his long career almost entirely based at UMIST and then at the University of Manchester. His exceptional talents were widely recognized throughout the worldwide corrosion community. His tireless commitment over more than 40 years was key to the success of the UMIST Corrosion and Protection Centre, and underpinned its reputation for excellence, both in the United Kingdom and internationally. The major financial support he gained from the U.K. research councils, the European Union, and industry was critical to its longevity. Of all his achievements, perhaps his greatest, was the opportunity he gave to the many MSc and Ph.D. students and postdoctoral workers, to study with him at the Centre, and afterwards to establish themselves in careers in academia, industry, and elsewhere. He was generous with his time and support. There are many cherished memories that will remain forever in the hearts of everyone he worked with and these are reflected in the many deeply moving messages of condolence received by his family.

George was born on the March 7, 1946 in Old Swan in Liverpool. He graduated with a 1st class honors degree in metallurgy in 1967 at the University of Nottingham. He decided to continue studying under the supervision of Brian Noble, who was just beginning to establish a research group into precipitation in aluminum alloys. A significant part of George's thesis was into alloys containing lithium. This was a topic which was to dominate aluminum aerospace alloy research for 20 years thereafter. From the thesis presented in 1970, George and Brian were able to publish six high-quality papers in leading journals. After completing his thesis, George stayed in the department to work on the effects of heat and mass transfer on the corrosion behavior of selected metals under the supervision of Peter Boden. Throughout his career, George made frequent contact with Brian and Peter and they made many visits to UMIST to act as examiners of George's Ph.D. students. In 1973, he joined Howson Algraphy (now Agfa) to do fundamental R&D work and was seconded to the Corrosion and Protection Centre at UMIST. In 1978, he joined the academic staff at the Corrosion and Protection Centre and was promoted to Professor of Corrosion Science and Engineering in 1990. He served as both Head of the Corrosion and Protection Centre and as Deputy Head of the School of Materials at the University of Manchester.

George was not what you would call self-effacing, but he had every reason not to be as for several decades he was

considered by many to be the "go to" in international academic circles for all things related to aluminum oxidation and corrosion control, particularly for the fundamentals of aluminum oxide growth mechanisms and the use of advanced characterization techniques. By combining tracer and marker techniques with high-resolution transmission electron microscopy, quantitative ion beam analysis, and the use of model alloys, new insights were obtained into ionic transport processes in amorphous and crystalline anodic films, the migration of alloying element species, the enrichment of alloying elements in the substrate that accompanies film growth, and the mechanism of pore formation in porous anodic oxides. Such information provided a sound basis for understanding the effects of alloying elements on anodizing of compositionally complex commercial alloys, in which second phases often have detrimental influences, for instance degrading corrosion protection. He was a world-leading authority in his area, as reflected in his international collaborations across the world and the demand for him as an invited speaker over several decades. His expertise was not only demonstrated by his academic collaborations but also in his significant industrial collaborations across the aluminum industry sectors, including aerospace, automotive, and lithography. Notably, indispensable to these achievements was the long-standing collaboration between George and Professors Ken Shimizu and Hiroki Habazaki, at Keio and Hokkaido Universities, which also led to the extension of the approaches used so successfully with aluminum to the study of anodic oxide growth on other metals, such as hafnium, niobium, tantalum, titanium, tungsten, and zirconium.

In addition to his scientific leadership in the aluminum sector, George was also a leading innovator in introducing and developing novel instrumental approaches to material characterization. Equally, beyond the sphere of academic fundamentals, George's role impinged successfully on many industrial collaborations outside of what might be considered his base knowledge; one example being his 3D characterization of semiconductor materials used in industrial cabling.

George was fully focused on his aluminum studies—his scientific life revolved around atomic number 13 (aluminum) practically to the exclusion of all else except, possibly, for magnesium and titanium. That said, George was an amiable companion over many lunches, occasionally drifting off science to discuss the success or otherwise of Liverpool FC. More occasionally he would discuss his latest car purchase—usually a new top-of-the-range BMW—however, his car was rarely seen, because George took the tram to work at the Mill most days. One of the most enduring images that many will have of George is turning up his university office every day with his newspaper

sticking out of his jacket pocket. Such seemingly minor images are part of his enduring character.

George's research interests were largely focused on the corrosion and protection of light alloys with applications in the architectural, automotive, aerospace, lithographic, and packaging sectors. He collaborated with many industrial companies including Alcan, Airbus, Akzo Nobel, Avic, BAE Systems, BIAM, Constellium, CSIRO, Elval, Magnesium Elektron, Novelis, Poeton, Rolls Royce, and Sapa. He collaborated extensively with scientists in the United Kingdom, China, Europe, Japan, and United States. He made extensive use of electrochemical, electron-optical, surface analytical techniques to develop a deep understanding of the influence of microstructure and composition on corrosion and its control. This successful research was recognized by his appointment as an OBE for research services to the defense industries and by election as a Fellow of the Royal Academy of engineering and many other prestigious awards. He received the TP Hoar Award from the Institute of Corrosion and the Kape Memorial Medal (on three occasions) from the Institute of Metal Finishing, both for best papers in journals. He also was awarded the Beilby, European Corrosion,

IOM3 Platinum, Sainte-Claire Deville, and Cavallaro Medals, and the UR Evans Award, from top international learned societies. He was the first U.K. scientist elected to Fellowship of the U.S. Electrochemical Society and, in 2009, received the Distinguished Achievement Medal from the University of Manchester as Researcher of the Year.

In his final years, George suffered increasingly from the cruel effects of dementia. Despite the toll it took on his mental and physical abilities, he endeavored to come to the university as often as possible and reminisce about earlier days. The Corrosion and Protection Centre meant so much to his life he could not leave it easily.

George will be sadly missed by his friends, colleagues, and collaborators around the world. Our sincerest condolences go to his wife Marilyn, son James, and daughter Sarah.

With thanks to Professor Thompson's family and his many friends and colleagues who shared their memories of George and his life. © Geoff Scamans, Peter Skeldon, and Xiaorong Zhou. Licensed under CC BY-NC, edited for style.