



IN MEMORIAM

Gareth Thomas
Professor of Metallurgy
UC Berkeley
1932 – 2014

Professor Gareth Thomas is almost universally recognized as one of the leading Materials Scientists of the twentieth century, and was, in fact, one of those who created this academic discipline. He is best known for his seminal contributions to the development of electron microscopy as a central research tool in Materials Science, but is also honored for the breadth and depth of his research on the structure and properties of materials, for his executive leadership of the leading scientific societies and technical journals in the field, and for his significant contributions to the education of a generation of productive materials scientists.

Gareth Thomas was born on August 9, 1932, and raised in Wales, and was educated there through the completion of his undergraduate degree in Metallurgy, from the University of Wales, Cardiff, in 1952. He then entered Cambridge University to pursue a Ph.D. in Metallurgy. Cambridge was at that time a hotbed of research and development in transmission electron microscopy, a new tool that permitted scientists, for the first time, to study the microstructure of materials at the nanoscale and to characterize such important crystal defects as dislocations and nanoprecipitates. This revolutionary observational tool led to an explosion of new information on the nature of materials at the nanoscale along with an avalanche of new understanding of why materials behaved as they did and how that behavior might be controlled. Gareth immersed himself in this new technology, became one of its rising stars, and generated important new results on the hardening of aerospace aluminum alloys. His research proved very useful in the analysis of the aluminum fatigue failures that led to the demise of the Comet aircraft, the first commercial passenger jet.

On completing his Ph.D. in 1959, Gareth came to the United States as a Visiting Scientist at the Alcoa Research Center. Shortly thereafter he was offered a faculty position in what is now the Department of Materials Science and Engineering at Berkeley, with a specific assignment to develop transmission electron microscopy as a research tool for the study of materials. He spent the rest of his career at Berkeley as a Professor of Metallurgy, moving to Professor of the Graduate School on his semi-retirement in 1995, and to Professor Emeritus of Materials Science in 2006. Until 1995 he held a joint appointment with the Lawrence Berkeley National Laboratory.

In research, Professor Thomas is best known for his leadership in the field of electron microscopy. By the end of the 1960s he had developed one of the world's leading laboratories at Berkeley. This activity culminated in the founding of the National Center for Electron Microscopy at LBNL in 1983. Gareth Thomas was the founding Scientific Director of NCEM, and held that position until 1993.

However, Gareth was always of the opinion that electron microscopy was a tool rather than an end in itself, and should be judged by its value in research. He exemplified that attitude by doing significant research on a broad range of topics in Materials Science. His research on the structure and properties of alloy steels

generated important scientific contributions to steel metallurgy, the development of a series of new alloy steels, including some of the first “dual- phase” steels, and the commercialization of those alloys through his participation in a company, MMFX Technologies, that exploited his results. His research on magnetic materials led to significant publications and patents in that technology, particularly including the development of giant magnetoresistive heterogeneous alloys. He also contributed to the characterization and development of advanced structural ceramics. His intellectual contributions are recorded in two influential texts, in more than 500 scientific articles and in a dozen patents. His contributions are recognized in a lengthy list of prestigious awards, including election to both the National Academy of Engineering and the National Academy of Science, an Sc.D. awarded by Cambridge University, honorary doctorates from Lehigh University and from the University of Mining and Metallurgy (Krakow), election to the grade of Fellow in the American Society for Metals (ASM), the Royal Microscopical Society (UK) and The Metallurgical Society (TMS), honorary memberships in the Japan Institute of Metals, the Korean Institute of Metals and the Indian Institute of Metals and Materials, and many prestigious awards from technical societies in the materials community.

His professional leadership in the materials community included his service as President of the Electron Microscopy Society of America and the International Federation of Societies for Electron Microscopy, his service as Editor and Technical Director of *Acta Materialia*, which is, arguably, the leading technical journal in Materials Science, and his membership on the Board of Directors of The Metallurgical Society (TMS).

His contributions to the University include, most importantly, the education of some 100 graduate students, post- doctoral students and scientific visitors, a great many of whom hold senior positions in the field. (As a teacher and lecturer, he was adamant that students should be “challenged rather than entertained.” As he put it, “Berkeley is an institution of learning, not an institution of teaching.”) He was also active in executive service to the University, serving as Associate Dean of the Graduate School and Acting Vice Chancellor for Academic Affairs, as well as on many academic and administrative committees. On his retirement in 1995, he was awarded the Berkeley Citation for his contributions to the University.

As a person, Gareth is well described as one who was truly alive, always excited about something, always pursuing some new (and, occasionally, crazy) idea, always stimulating those around him. As a young man he was an athlete, a fly- half in rugby who was good enough to play for the Olympic Club (and sacrifice a few teeth in the process). In his maturity he was partial to great wines, gourmet food and automobiles. He maintained a notoriously unreliable green Jaguar for many years (“Do you know what they call Jaguar owners?” he once moaned, “Pedestrians.”) Though an enthusiastic America citizen, Gareth was a Welshman his whole life. He was returned to his home in Wales on his death on February 6, 2014, and is buried there.

He is survived by his second wife, Annelies, his son, Julian, his daughter- in- law Kimberly and two grandchildren.

J. W. Morris Jr.