

European Materials Societies

Editorial Essay

By Robert Lallement*

It is well known that many major changes in human history have coincided with the mastering of the technology of new materials, so that we read of the Stone Age, then the Bronze Age, followed by the Iron Age. Each breakthrough in materials technology has brought about a modification in the habits of men and their ways of life. Whether the changes have been good or bad is another question... Nevertheless, it is a fact that the peoples or nations who achieved such breakthroughs usually also gained political power. This applies equally to the Hyksos, who conquered Egypt 4000 years ago through their mastery of the use of horses, metals, and war chariots, and to the nations which today have the technology for using nuclear materials.

What label can be applied to the age we now live in?—perhaps the steel and concrete age, or the plastics age? Are we now entering the era of titanium, carbon and plutonium?

The current worldwide interest in materials R & D has as its background the clear relationship that exists between technological progress and the discovery and mastering of new materials. This is not merely a passing fashion of the eighties, even though the fascination which the topic has for the media and for technical and political official bodies may sometimes appear exaggerated and irritating.

Leaving aside the materials mania, the facts which concern us as scientists are that, in the first place, advances in materials science have an essential role in the future of mankind, and secondly, the last ten or fifteen years have seen a scientific revolution in the approach to materials science. Before this, the subject was treated essentially through a *categorical* approach, with distinct sciences of ferrous materials, ceramics, plastics, etc., which were rigidly separated and did not interact very much. That approach has become less and less valid, and nowadays the optimum use of materials requires an *integrated* approach. The only effective way to prepare students and researchers for real life in our universities or laboratories is to teach them the *science of materials*, which is a cocktail of chem-

istry, physics, metallurgy, mechanics, and even other sciences. Our old categories are exploding and fading away:

*Come teachers and searchers
Throughout the land
And keep your eyes wide open
The chance won't come again
Your old road is rapidly ageing
For the times they are a-changing.*

Adapted from a song by Bob Dylan

The metallurgical societies, which were established according to the old categories, must adapt themselves, and these changes are already beginning. For example, the (UK) Institute of Metals has now become the Institute of Materials, the (US) Metallurgical Society is now the Minerals, Metals and Materials Society, and the Société Française de Metallurgie may soon become the Société Française de Métallurgie et des Matériaux.

Along with these trends towards increasing integration between the different aspects of materials science, we are also beginning to see moves towards growing European integration, where the long-established national scientific societies are now finding that they need to adjust to the de-

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veloping European Physical Society, a Federation of European Chemical Societies, a European Polymer Federation and similar societies for other disciplines, and it seems likely that eventually we shall have a European Materials Society. At present, though, we are far from that goal. Many of the national societies in European countries are fighting for survival. They suffer financial difficulties, they sometimes find it a struggle to organize meetings that come up to the best international standards, and they compete with difficulty against the well organized US and Japanese scientific bodies.

Recognizing these problems, the Institute of Materials (IOM), Deutsche Gesellschaft für Metallkunde (DGM) and Société Française de Métallurgie (SFM) decided early in 1988 to join together and create the Federation of Euro-

pean Materials Societies (FEMS). I have the honor of being elected as the first acting president of FEMS. It is satisfying to report that many national bodies in Europe have responded positively to our invitation to join the Federation. We have already launched a first European Technical Conference, EUROMAT 89, to be held in Aachen in November 1989, and further European conferences are in preparation. In addition we have already signed an agreement with the Minerals, Metals and Materials Society for future collaboration. This is a significant step towards an effective and cordial relationship with the US scientific community. These and our other activities are expected to make a major contribution towards improving international communication in the world of materials science and engineering.



Dr. Robert Lallement, born in 1934, graduated from Ecole des Mines de Paris in 1955. He received a Master of Science from Caltech, Pasadena, CA in 1959 and an Ingénieur Docteur from Paris University in 1963. In 1969 he became Head of the Metallurgy and Fuel Division in the French Atomic Energy Commission (CEA); since 1982 he has been in charge of the nuclear programs in the French CEA. Dr. Lallement has been Acting Chairman of the French Metallurgical Society since 1987 and he is the first president of the Federation of European Materials Societies.

The following review articles will appear in future issues:

G. M. Whitesides, C. D. Bain: Modeling Organic Surfaces with Self-Assembled Monolayers

F. Garnier: Functionalized Conducting Polymers—Towards Intelligent Materials

D. W. McCall: Materials Issues in Electronic Systems

W. Michaeli: Material Processing—a Key Factor

B. R. Philips, D. Tanner, J. A. Fitzgerald: The Kevlar Story—An Advanced Materials Case Study

M. Salkind: Aerospace Materials Research Opportunities

D. F. Williams: Challenges in Materials for Health Care Applications



From March 1st, the editorial team of Advanced Materials will be strengthened by the appointment of Dr. Peter Gregory as Associate Editor. Peter Gregory studied chemistry at University College London, England, gaining a B.Sc. in 1983 and a Ph.D. working in the research group of Alwyn Davies in 1986. His doctoral work included a study of the radical and radical ion chemistry of polyacetylenes and other industrially utilized polymers along with research into the single electron transfer reactions of organic molecules in general. He then moved to West Germany, working for just over two years in the interdisciplinary research group of Paul Schleyer at the University of Erlangen-Nürnberg. Here he gained experience in a number of areas, ranging from spectroscopy and crystallography, through the development of high density materials, to the application of computers in chemistry. With this broad background he will help make Advanced Materials the journal which best serves the needs of the materials science community.