

The European Materials Research Society (E-MRS)

Editorial Essay

By Eberhard F. Krimmel*

It was on February 17, 1986, when the European Materials Research Society (E-MRS) was registered at court as a non-profit making learned society with its seat at the "Centre de Recherches Nucléaires" in Strasbourg, France. The history of the Society, however, started many years before when a group of French scientists used to discuss once a year new results and problems of ion implantation, laser and electron beam annealing, etc.

The number of persons participating in the symposia organized by this group of very active scientists continuously increased, the symposia found international recognition and were greatly in demand. Seeing this encouraging development a small circle of scientists from different countries within Europe who were attending one of the symposia in 1982/83 realized that it was time to become organized at the European level. The society to be founded should have an interdisciplinary character and be open to all scientists such as chemists, engineers, physicists, etc., interested and working in research and development within materials science. This nucleus of scientists became the basic unit of the European Materials Research Society. The enthusiasm of the involved scientists, most of them very young scientists, is such that the Society runs on a honorary basis, and although perfectionism is not requested vitality is. The philosophy is that it doesn't matter if a young scientist makes a mistake as not even experienced ones are perfect and in any case mistakes can be corrected!

The categories of membership of the Society are as follows:

First of all there are the ordinary members. These are physical persons active in the domain of materials science and technology or people who contribute to the development of these fields of science. Another category concerns sustaining members which are corporate persons such as associations, societies, groups, laboratories, and industrial companies. They must show evidence of supporting activity.

In the United States a society, the Materials Research Society (MRS), was already active with a similar program to that proposed by the European scientists. It was obvious that the American colleagues should be contacted in order to establish international links for the benefit of everybody. Thus, the idea emerged to establish an international federation of autonomous societies having similar structures and aims, all being devoted to materials research and

development. These activities concern societies in the USA, Europe, Australia, China, Japan, South America, India, etc.

The E-MRS was founded with the knowledge that over the turn of the century the social future of Europe will depend on the progress that is made in new technologies especially in the development of the materials sciences. These new technologies must also be ecologically beneficial. The aim of the E-MRS is to contribute to this progress by promoting relevant efforts. Chemists, engineers and physicists are scientists who work in different fields and at different levels of a very complex whole. They have to cooperate and intercommunicate to obtain the results which benefit a growing society and which guide the development of our civilization and culture. Thus the E-MRS provides a forum to these scientists for efficient and rapid intercommunication. To this end, the E-MRS organizes conferences, workshops, summer schools, etc. which cover all disciplines of materials science such as ceramics, metals, semiconductors, composites, polymers, and biomaterials. Symposia arranged at short notice on present-day topics, e.g. high- T_c superconductors demonstrate the vitality and quick response of the Society.

In order to emphasize the idea of an unified Europe the main conferences of the E-MRS take place at the seat of the Council of Europe in Strasbourg. Workshops or co-sponsored meetings may be held in other places. The plenary sessions of the main conferences in Strasbourg host the best scientists as speakers on topics which reflect key areas of research on an interdisciplinary level. This years meeting, the largest yet, was attended by 850 people from many nations. Professors Friedel (University of Paris, France) and von Klitzing (Max Planck Institute for Solid State Research, Stuttgart, FRG) led off the extremely strong program of more than 450 lectures, posters and discussion sessions which lasted for four days. The educational potential of the program is always high and therefore special attention has been directed to make it feasible for students to attend the conferences, and publication of conference proceedings and reports serves to disseminate the latest scientific findings to a broad audience.

The interdisciplinary nature of the cooperation and scientific exchange between university and industry R & D efforts is the basis of the E-MRS. Thus the E-MRS coordinates "European Networks" in the field of materials research. At present, 16 Networks covering various fields in electronic and non-electronic materials research and development are in action and more than 200 industrial and university laboratories are involved. Brief details are given in the box.

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European Networks of the E-MRS*Non-electronic Materials:*

- Network 2: Coordinator: Balkanski; Title: Solid state ionics.
- Network 3: Coordinator: Fredriksson; Title: Crystal growth and solidification of metals.
- Network 4: Coordinator: Böttiger; Title: New methods in metastable alloy production.
- Network 8: Coordinator: Muster; Title: Biomaterials.
- Network 10: Coordinator: Chadwick; Title: Pressure casting and metal matrix composites.
- Network 12 A: Coordinator: Rizzuto; Title: High- T_c massive superconductors.
- Network 13: Coordinator: Legros; Title: Materials research in microgravity.
- Network 15: Coordinator: Waysand; Title: Materials for low temperature detectors.

Electronic Materials:

- Network 1: Coordinators: Boyd, Krimmel; Title: Laser chemistry, beam and photon processing.
- Network 5: Coordinators: Sirtl, Wagner; Title: High-resolution, high-sensitivity analysis of semiconductors.
- Network 6: Coordinator: Bentini; Title: Ion beam processing of electronic materials.
- Network 7: Coordinator: Triboulet; Title: II–VI Telluride-based semiconductors.
- Network 9: Coordinators: Wettling; Title: Gallium arsenide.
- Network 11: Coordinator: Zerbi; Title: Polyconjugated polymers.
- Network 12 B: Coordinators: Bongers, Habermeier; Title: High- T_c thin film superconductors.
- Network 14: Coordinator: Quillec; Title: Indium phosphide-based semiconductors.

Further details are available from the author.

Also along these lines the E-MRS attaches importance to a fruitful cooperation with other more specialized societies. Such cooperation is already successfully taking place bringing bilateral benefits.

A further topic of activity concerns the critical analysis of the educational situation in the different parts of Europe. The necessity has been recognized of offering, for example, short intensive courses in the various fields of materials science, to individuals not normally having such training possibilities and to other interested parties, including students, to

improve their professional skill and to broaden their area of expertise. Up to now more than 10 European intensive courses have already been implemented at the initiative of the E-MRS, exemplified by the Biomaterials course which was part of the Strasbourg meeting.

The E-MRS has been rapidly growing over the last three years and it doesn't take a clairvoyant to see that this will continue. 1992 is coming soon and the importance of materials science is just beginning to be realized.



Eberhard Krimmel studied physics at the University of Tübingen, FRG being awarded a diploma in 1958 in molecular spectroscopy and a Ph.D. in electron interferometry (1961). After a stay of two years at the University of Illinois, Urbana, USA as an Assistant Professor studying radiation damage in metals he started a career with Siemens in Munich, FRG as manager of a research department concentrating on semiconductor and laser technology (1970–1987). From 1982–1985 he was a part-time Professor at the Rand Afrikaans University, South Africa and since 1986 has been an honorary Professor at the University of Frankfurt/Main continuing his interest in semiconductors and ceramics. He was a founding member of the E-MRS (1983) and from 1985–1989 was its Secretary.

An extra large ADVANCED MATERIALS "Materials Science in Britain" is planned for the double issue August/September to coincide with the British Association for the Advancement of Science (BAAS) meeting to be held in Sheffield (UK) September 10.–14. The issue will contain five review articles from top British materials scientists including B. A. Joyce "Tailoring Semiconductor Materials to Atomic Dimensions" and J. M. Thomas "Catalysts". R. W. Cahn, G. W. Gray and C. J. Humphreys (amongst others) contribute to the other sections of the journal.