

European Networks Strengthen Research and Industry Links

The building of Europe is an important and fascinating task which is presently advancing rapidly. One of the recent actions taken to foster this process is the European Networks on Advanced Materials. Managed by the European Materials Research Society, the system of 11 networks is now in its second year of existence.

On September 17, 1984, the European ministers of research recommended the creation of "European networks" to enhance the scientific and technical cooperation between research teams of different countries. "Materials science" was particularly identified as deserving the establishment of such networks. In 1987 E-MRS decided to develop a series of networks, with the participation of industries and public institutions, on selected topics concerning "advanced materials." The Council of Europe and the Commission of European Communities (CEC) supported this project; in particular the CEC, under the EURAM R&D program (European Research on Advanced Materials), granted a contract allowing the first step of this action.

The purpose of the networks is to bring together the most motivated people, to identify the topics which appear most promising, to help the best European laboratories to collaborate in day-to-day research, and to take part in the education of materials science specialists. In defining their actions, all groups consider the possible short-term or middle-term industrial applications and stress the fundamental research needed to implement or develop these applications. They plan collective research, attaching special importance to problems of material fabrication and characterization, and they organize information exchange through different channels, including E-MRS symposia.

Eleven networks were active in 1987-1988 and continue to progress, together with three new ones (see Table). Selection of the 11 initial network topics and chairmen was made by the E-MRS executive board and endorsed by the CEC authorities (J.G. Wurm, responsible for the EURAM program). The new group on superconducting ceramics was proposed by the EURAM leader; the network on indium phosphide was created by British, French, and German teams who felt the need for European cooperation; the network on materials under microgravity arose from an already existing European society (ELGRA) desiring E-MRS support.

Three main reasons explain why the networks are popular among the materials research community:

1. The pluridisciplinary approach which

is now usual in materials science is, of course, a common practice of these groups. The E-MRS context eased such an approach, while the national societies were generally fixed on physics or chemistry alone.

2. The networks' function is to inform the CEC on recent trends in research topics through reports (written by each network in its first year of existence). Reciprocally, the scientists active in the networks got important and early information on the CEC research programs. The networks currently help to nucleate groups of research teams able to present worthy proposals to these programs—not only to the EURAM program, but also to ESPRIT and SCIENCE, which are partly devoted, respectively, to research on electronic materials and to fundamental materials research.

3. The networks allow their participants to play a personal role in the building of Europe, a popular new frontier. Concretely this means an improvement in research efficiency. "Old Europe" is more static than, for example, the United States, as far as jobs and employment are concerned. The networks are useful in somewhat easing

the rigid boundaries between institutions and helping the scientists to travel and exchange information.

It is not possible to describe each network in detail, but I would like to offer some brief examples. More detailed information about each of the European Networks on Advanced Materials is scheduled for upcoming issues of the MRS BULLETIN. Interested readers can also obtain a brochure detailing the networks from: P. Siffert, Chairman, European Materials Research Society, Centre de Recherches Nucléaires, 23, rue de Loess, F-67037, Strasbourg, France; telephone 88 28 65 43; fax 88 28 09 90.

Network 6, for example, is devoted to high energy ion implantation in semiconductors and chaired by G. Bentini (Italy). High energy (high current) machines are considered crucial for the development of microelectronics but are not available in any European country. Such machines will be soon operational for research activity in the United States but they are classified and will not be sold to European institutions in the next few years. This network has proposed the development of European facilities where the necessary sample irradiation could be performed. Moreover it has recommended support for the development of European prototypes of high energy implanters.

Network 8 on biomaterials has an original structure. Chaired by D. Muster (France), it is composed of institutions belonging to seven European regions or provinces. Research institutions play a central role, but industries and even banks and marketing offices also take part. An assessment study has been prepared for the CEC, and the partners have agreed on joint actions with three aims: training, research, and development. Three have been identified as deserving collective action and as being likely to generate new ideas: developing new materials specifically designed for biological use; optimizing traditional materials and studying their biocompatibility; and monitoring implants under biological stress.

The animation of the scientific community by the E-MRS networks is only beginning. It is gratifying that basic scientists in their laboratories are the main actors in this program and that managing structures such as the European Communities are interested in hearing their ideas.

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E-MRS Networks on Advanced Materials

Network Number	Theme	Group Leaders
1	Laser chemistry	K.L. Kompa, E.F. Krimmel (FRG)
2	Solid state ionics	M. Balkanski (France)
3	Modeling of solidification	H. Fredriksson (Sweden)
4	Metastable alloy production	J. Bottiger, B. Stritzker, M. von Allmen (Denmark, FRG, Switzerland)
5	Microanalysis of semiconductors	E. Sirti, A. Cullis (FRG, UK)
6	High energy ion implantation	G.G. Bentini (Italy)
7	II-VI Te-based semiconductors	R. Triboulet (France)
8	Biomaterials	D. Muster (France)
9	Gallium arsenide	H.S. Rupprecht, W. Wettleing (FRG)
10	Metal matrix composites	G. Chadwick (UK)
11	Electroactive polymers	M. Zerbi (Italy)

Emerging Networks: Superconducting ceramics, Materials under microgravity, InP and related III-IV materials.