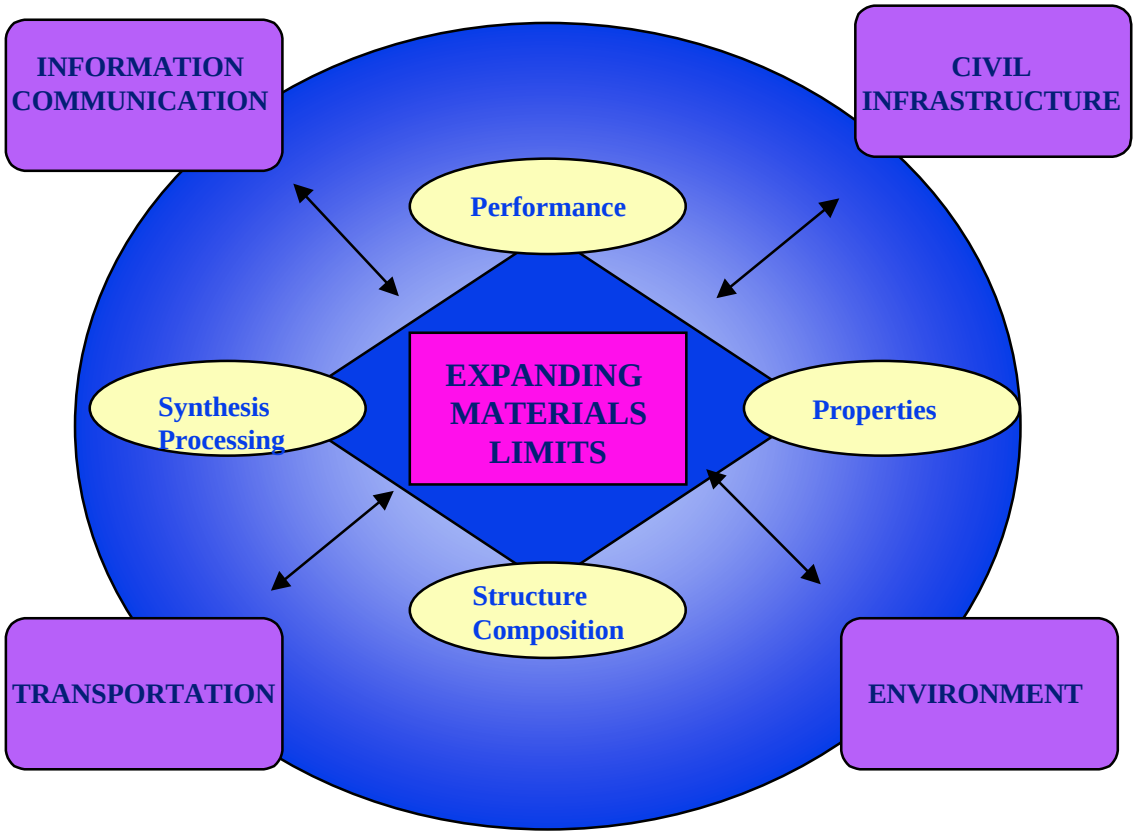
REPORT OF THE WORKSHOP ON MATERIALS FOR FUTURE TECHNOLOGIES



EUROPEAN COMMISSION - US NATIONAL SCIENCE FOUNDATION

LEUVEN - BELGIUM

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PREFACE

TOWARD GREATER INTERNATIONAL COOPERATION IN MATERIALS RESEARCH

Materials are more than mere components in technology; rather, the basic properties of materials frequently define the capabilities, potential, reliability, and limitations of technology itself. Improved materials and processes will play an ever increasing role in efforts to improve energy efficiency, promote environmental protection, develop an information infrastructure, and provide modern and reliable transportation and civil infrastructure systems. Advances in materials science and engineering, therefore, enable progress across a broad range of scientific disciplines and technological areas with dramatic impacts on society.

Continued progress in materials science and engineering is increasingly dependent upon collaborative efforts between several different disciplines, as well as closer coordination among funding agencies and effective partnerships involving universities, industry, and national laboratories. In addition, because of the rapidly growing interdependence of the world's economies, partnerships are not only important at the national level but from an international point of view as well.

With this in mind, the European Commission and the US National Science Foundation co-sponsored a workshop in the area of materials research designed to help stimulate enhanced collaboration among materials researchers and create networks linking the participating countries. The workshop was held on December 12-14, 1996 in Leuven, Belgium and was attended by eminent scientists and engineers from the European Union countries and the United States. Their excellent report is attached. We would like to thank all the workshop participants and in particular the workshop co-chairs Prof. Dr. Dr. h.c. Horst Czichos, Prof. Bertrand Escaig, Prof. dr. ir. Jean Pierre Celis, Dr. Praveen Chaudhari, Dr. Mark Ketchen, Prof. Venkatesh Narayanamurti, and Dr. James C. Williams for the considerable effort that went into the preparation of the report.

Since the workshop took place, the European Community and the United States signed on December 5, 1997 a draft agreement for scientific and technological cooperation in the materials sciences among several other areas of cooperative activities. Thus, the workshop report comes at a highly opportune time.

From time to time we expect to communicate with the materials research communities in the European Union countries and in the United States as we jointly work toward implementation of the recommendations contained in the workshop report.

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European Commission–National Science Foundation
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Executive Summary

Scientific research is complex and expensive. Technology can be advanced by collaborative research, in which expertise in a number of fields is brought together to solve a particular problem. Institutions are now reaching out to expand that collaboration between researchers in the United States and the European Union, spurred by the increasing globalization of the economy and the concomitant challenges that this poses for technology and economic progress.

To that end, staff members of the European Commission (EC) and the US National Science Foundation (NSF) hosted a meeting December 12-14 in Leuven, Belgium. Workshop participants were eminent researchers in the field of materials science and engineering, charged with identifying specific areas for fruitful US-European cooperation in the interdisciplinary field.

There are benefits to be gained from such international cooperation. The key is to exploit the complementary aspects of the systems and cultures on both sides of the Atlantic Ocean to produce a result that cannot easily be accomplished by either side alone. There is now a strong will to cooperate, which increases the likelihood that the objective can be achieved. Materials research is a logical area for some of the earliest interactions because of its inherent interdisciplinarity and crossing of traditional boundaries, as well as the significant amount of funding devoted to the area by both partners.

Several mechanisms were identified that could promote long-term international cooperation:

- The EC and the NSF should encourage and develop means for the collection and dissemination of information on materials research enterprises.

- The EC and the NSF should conduct a pilot for international cooperation in materials research consisting of several coupled projects.

- The European and US materials research communities should be more pro-active in strengthening existing and finding new ways for cooperation, such as virtual centers. They should also document those ways that work well as a blueprint to others.