

**Virginia Tech
College of Natural Resources
Sustainable Engineered Materials Institute**

CHARTER

April 16, 2002

Overview:

The Sustainable Engineered Materials Institute was established to coordinate research, instruction, and outreach activities involved with the development of materials derived from natural resources. It is comprised of a group of faculty, staff and students, primarily in the College of Natural Resources, who have a shared interest in cooperative research and scholarship. SEMI promotes the wise management of timber resources to ensure an economic and environmentally sustainable supply of renewable resources to match future demand for building construction materials and allied products. Furthermore, SEMI encourages and supports continued advances in the science and technology of composite materials derived from ligno-cellulosics, particularly woody plants, promoting the transfer of these new developments to industries and government organizations in Virginia, the nation, and the world.

Objectives:

- 1) Develop a methodology and a database for assessing alternative forest management practices consistent with future demand for wood products.
- 2) Develop a methodology for designing, evaluating and implementing new composite products based on principles of materials science.
- 3) Assess the economic viability of developing new wood-based composite products and alternative forest management practices.

The approach will include developing formal relationships with federal and state agencies to share information on wood quality, growth and yield for several forest types, including intensively managed forests, along with information on environmental impact. Existing partnerships with industry will be expanded to share similar information. New data on intensively-managed forest plantations will be collected. We will seek cooperation with other countries, such as Chile, China, Australia and New Zealand, which have long-term experience with intensive forest management practices with tree species that are indigenous to North America. Formal agreements are currently in place with sister institutions in all of these countries, which will speed the exchange of information. Material use patterns in the US, including a life-cycle analysis of wood-based products and substitute materials, will be surveyed. Economic models will be derived for assessing business opportunities on private land in rural areas.

Faculty and Students:

Faculty and students who are involved with forest management and wood-based composite materials are primarily in the Departments of Forestry and Wood Science and Forest Products. Others who cooperate on research are housed in the Departments of Computer Science, Engineering Science and Mechanics, and Biological Systems Engineering. Current funding supports the activities of 12 faculty and 10 graduate students within the College of Natural Resources.

Clientele:

The College of Natural Resources has had long-standing relationships with many corporations in the forest products and adhesives industries. These companies represent most of the industrial forestland owners and manufacturers of wood-based composites in the United States. They contribute to the College by providing funds for research and support of graduate students fellowships and undergraduate scholarships.

Governance:

The Stakeholders Committee will review the financial and administrative functions of the center, and will receive annual reports from the Center Director. The Stakeholders Committee will be comprised of the Head of the Department of Forestry, Head of the Department of Wood Science and Forest Products, Dean of the College of Natural Resources, and Center Director (ex-officio),

The Stakeholders Committee has the authority to appoint the Director, with the concurrence of the Dean of the College of Natural Resources.

Funding:

Funding for SEMI will be from a USDA Special Grant titled "Sustainable Engineered Materials From Renewable Resources", the Wood-Based Composites Center, and extramural research grants and contracts. The USDA Special Grant was established in FY2002 and represents continuous funding with annual approval. The WBC Center funding is derived from industrial contributions that have been in existence since 1999. Research grants and contracts will be administered by the Office of Sponsored Programs and will generate overhead that will benefit the Institute. The distribution of overhead will follow the guidelines established by the Virginia Tech Research Division with approval by the Dean of the College of Natural Resources. A cost recovery account generates funds for the Wood-Based Composites Laboratory. These funds allow the Laboratory to restock and perform equipment maintenance and repair.

Significant funding opportunities for the Institute exist from the US Department of Agriculture, US Department of Energy, and the National Science Foundation. Industrial

contracts are expected to continue. The development of intellectual properties in cooperation with Virginia Tech Intellectual Properties, Inc. is a focus of the Institute's research program.

The Department of Forestry and Department of Wood Science and Forest Products will provide faculty and staff time to support the activities of the Institute. The Departments will also provide laboratory and office space that is normally allotted the participating faculty and staff. The laboratory space includes the Wood-Based Composites Laboratory, Wood Adhesion Laboratory, Thermal Analysis Laboratory, Recycling Laboratory, and several forest research plots.

Basis for Continuation:

The Institute will continue to operate contingent on USDA Special Grant funding, or alternative financial sources, to maintain the employment of the restricted faculty and staff positions. All of the faculty and staff wholly funded by the Institute are in restricted positions that must be renewed annually. The Institute may also be discontinued at such time when the interdisciplinary collaboration of the faculty and academic units of the University no longer are required in the context of the stated objectives.

Director:

The Director acts as Chairman and member of the Stakeholders Committee. The Director is charged with the responsibility of setting an agenda of activity, which insures the growth, and success of SEMI. The Director has the final authority for the allocation of funds associated with SEMI within the framework of policy established by the University. The Director shall be the formal representative of SEMI to the College, the University and its organizations concerned with matters that influence or interface with SEMI and its operation. The Director reports to the Stakeholders Committee and the Dean of the College of Natural Resources.