Up Close: The Advanced Materials Institute

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Editor's Note: This is the ninth article in a series focusing on the research capabilities and goals of interdisciplinary laboratories pursuing materials research in universities, industry, and government.

A Colorado Consortium

The Advanced Materials Institute (AMI) is the materials research arm of the Colorado Advanced Technology Institute (CATI), a state agency created in 1983 by the state General Assembly as an economic development initiative involving academic, industry, and government sectors. AMI represents a unique process in academic research: long-term materials needs of industry members are addressed by university investigators, with federal agencies providing the major source of funding.

AMI is a consortium of four research universities (Colorado School of Mines as the lead institution, Colorado State University, and the Universities of Colorado and Denver) and a present industrial membership of nine corporations (AMAX Inc., Adolph Coors Company, Digital Equipment Corporation, Gates Company, Hewlett Packard, IBM, Manville, Martin Marietta, and Telectronics). The Institute is governed by a Board of Directors with representatives from each participating organization. Sustaining memberships, which do not include representation on the Board, are available; memberships of both kinds are open to non-Colorado-based companies.

How the AMI Concept Works

The long-term materials needs of industry members provide AMI's research agenda; many items, once identified, become company-shared interests. Requests for proposals, based on the agenda, are distributed to the affiliated universities for competitive awarding of seed funds. Proposals receive peer review and the Board selects those to be funded. Projects arising from the winning proposals then seek full funding through conventional proposal routes from federal and other agencies.

Seed grants have been limited so far to \$5,000, enabling only minimal support of a graduate student, purchase of supplies, etc., but enough to give the proposer a competitive edge in marketing the proposal. Although too small to support research, this amount does establish a tangible basis for interaction between the participating schools and the companies.

Seed proposals received by AMI often constitute innovative approaches not previously considered by a company in defining its needs. Companies have teamed with participating universities to open new lines of research independent of federal funding.

A consortium such as this enables combining the specialized capabilities of

two universities to focus on a single problem, reducing research and equipment duplication.

Overview of Results

As AMI begins its third year, the 25 awards authorized to date have resulted in seven major grants which now exceed \$2.3 million; 15 more proposals are either under review or being written. Each grant obtained in this manner represents a project, initially defined by company members, which also reflects the mutual interests of

academia and the funding agency. Federal funding of materials research at the four universities presently exceeds \$17 million and covers a broad range of advanced materials.

Four New Laboratories

This year CATI has made funds available to permit AMI to start specialized materials research laboratories. Proposals were invited from principal investigators, and industry board members selected from more than a dozen proposals the four that promised the greatest potential benefit:

- Materials Processing (Colorado School of Mines)
- High-Speed Electronic Materials (University of Colorado)
- Amorphous Materials (Colorado School of Mines)
- Polymers (Colorado State University)

Each laboratory will have multi-university involvement.

National Conference on Industry-University Advanced Materials

AMI hosted its first national conference February 25-27, 1987 in Denver, Colorado in conjunction with the annual meeting of The Metallurgical Society. Cosponsors were the Solar Energy Research Institute and the National Bureau of Standards. Nationally recognized research leaders presented keynote addresses in each topical area, followed by invited and contributed papers, more than 60 in all. The topical areas covered included advanced ceramics, amorphous materials, interfacial phenomena, materials and processes for high-speed electronic devices, and new high performance composites.

Long-Term Goals

The United States critically needs to improve the competitiveness of its industry in the international marketplace. The vast university research resource base must find new and effective ways to support domestic industry toward this vital end. AMI seeks to go beyond traditional university-industry interfaces to provide promising alternative linkages in advanced materials research.

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How the AMI concept works, from industry input to the awarding of seed funds.