and self-assembly during polymer processing, and fiber spinning from aqueous solution to achieve global alignment with minimal draw and energy input are all important activities in the process. Through the improved understanding of these activities, fundamentally new and useful approaches to the synthesis, assembly, and processing of polymers will emerge, as well as environmentally compatible approaches to these activities. Based on the early birefringence results described, we expect that mechanical properties of silk fibers can be further enhanced in comparison to the natural fibers, either through processing controls alone or coupled with genetic engineering of the native genes. Attempts to modify the system are discussed in the following article by Cappello. It should be noted however, that a considerable amount of research remains before the natural system is fully understood and can be used to guide modification efforts.

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New MRS Short Course Focuses on Biological Processes for Materials Synthesis

The Materials Research Society has announced an addition to its Short Course Program for the Fall Meeting in Boston, November 29–December 4, 1992. On Monday, November 30, Mark Alper, guest editor for this issue of the *MRS Bulletin*, will teach a one-day course on "Biological Processes for Materials Synthesis."

The initiation of this course was driven by the MRS Continuing Education Committee's recognition that the field of biological materials is developing rapidly, but that it has a foundation in molecular biology, biochemistry and organic chemistry, areas unfamiliar to many materials researchers.

The course is designed for people with limited knowledge of the fundamentals of biochemistry and molecular biology. It will focus on such topics as gene structure and function, and techniques that have been developed to modify genes to allow the production of novel proteins. The nature of enzymes and enzyme catalysis, both inside and outside organisms, will be discussed, as will protein engineering techniques for controlling enzyme activity for the production of novel materials. Membrane structure and function will be reviewed as the basis for understanding how these structures can serve as models for control of surface properties, surface-active films, sensors, and bioelectronic devices. Finally, the nature of "smart" biological molecules will be presented, illustrating how individual molecules or complexes of molecules can modulate their activity in response to a variety of environmental factors.

Alper teaches biochemistry at the University of California at Berkeley, where he was the Department of Molecular and Cell Biology nominee for the University's Distinguished Teaching Award. His courses have ranged from a survey for nonbiologists to a "hard core" (as he describes it) biochemistry program for majors and graduate students. The MRS course will combine aspects of the two. The course will also include fundamental principles of physics and chemistry relevant to the function and manipulation of molecules.

Information about the course can be obtained by calling the Materials Research Society at (412) 367-3003.