

August 8-12, 1988  
Skidmore College - Saratoga Springs, NY  
**BIOCATALYTIC SYNTHESIS  
OF ORGANIC COMPOUNDS**

This conference has the objective of demonstrating the use of micro-organisms and enzymes as synthetic tools for the organic chemist. The meeting will be run under the Gordon Research Conference format. Conference participants will be selected from applications; registration will be limited to 120. A partial listing of session titles and speakers is shown.

**Enzymatic Production of Organic Compounds:** Frost (Stanford), Rozzell (Genetics Inst), Wong (Texas A&M); **Microbial Production of Organic Compounds:** Abramowicz (GE), Taylor (ICI), Simon (Tech U Munich); **Enzymes in Extreme Environments:** Klibanov (MIT), Zeikus (MBI), Daniel (U Waikato); **Enzyme Mimetics:** Breslow (Columbia), Schultz (Berkeley), Groves (Princeton); **Asymmetric Conversions:** Kazlauskas (GE), Jones (U Toronto); **Biosynthesis with Recombinant Organisms:** Lazarus (Genetech), Ensley (Amgen); **Large Scale Bioconversions:** Nagasawa (Kyoto U), Kirchner (Chemie Holding AG), Pokora (Mead Paper). **Thursday Banquet Speaker:** Saul Neidleman (Cetus).

The planning board for the conference includes Dr. D.A. Abramowicz (GE) and Prof. A. Klibanov (MIT), co-chairmen, Dr. D. Anton (duPont), Prof. A. Demain (MIT), Dr. C.R. Keese (GE), and Dr. S. Neidleman (Cetus).

For further information and applications forms, please contact:

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## Astronomy & Astrophysics

Edited by  
Morton S. Roberts

Selected from articles published in *Science* between 1982-1984, these 24 papers are divided into four parts: Solar System, Structure and Content of the Galaxy, Galaxies and Cosmology, and Instrumentation. The volume reveals a broad, coherent, and contemporary picture of our astronomical universe. Includes two Nobel Prize lectures. Fully indexed and illustrated. 1985; 384 pages.

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more intense than the peaks predicted as being primary in multiple twinning models. While, in principle, dynamical interference effects can produce enhancements of secondary peaks in large single crystals of some materials, it is very difficult to explain why such an effect is observed in powder samples from a wide variety of icosahedral alloys prepared by many different methods. It is much more natural to conclude that all of the peaks are primary as the icosahedral quasicrystal model predicts.

I should emphasize that, while Pauling's model requires some of the observed peaks to be secondary, other multiple twinning models utilizing larger unit cells may not have this requirement. I refer the reader to the original article for a description of other experimental evidence against generic twinning models. Also, I disagree with Pauling's statement concerning further evidence in favor of twinning. The evidence that he cites does not distinguish between the models, since it is equally consistent with a larger crystal unit cell or a larger quasicrystal unit cell.

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### NOTES

1. Multiple scattering may contribute to the observed intensity of primary peaks, but the peaks would have nonzero intensity even in the absence of multiple scattering.
2. The scattering length is the distance over which half of the x-rays are coherently, elastically scattered out of the primary beam.

### Technology Transfer

While I would agree with James Johnson (Letters, 29 Jan., p. 450) that "technology transfer" has been the subject of much fadism both inside and outside universities and it often is misidentified, particularly by politicians, as the magic bullet to solve all our industrial competitiveness problems, I must disagree with his assessment that major research universities should not play a role.

First, universities have always been the source of the most fundamental form of technology transfer—the education of students, both full and part time, who move their knowledge directly into business and industry. After all, technology is not a thing to be packaged and sent as an industrial CARE package. To quote Robert H. Waterman, Jr., "Technology is housed in the skills of people" (1).

Second, while perhaps there was a time when universities did basic research and

industry did the applied research and development, we now find that in most areas of research this distinction just does not work. Industry now knows that the economic half-life of a new technology in the marketplace is so short it cannot just wait for the thorough but slowly revealed university research. This is one reason why university-industry collaborative research continues to grow in popularity. Of course this is also "technology transfer."

Finally, it is recognized that attempts to provide active technology transfer from university to industry can be somewhat of a failure if incorrectly organized. In our industry-driven program, as is true in a number of others around the country established by major research universities, we have a team of "impedance matchers" to work directly with industry to provide the needed one-on-one approach. These regionally located technology consultants are all "degreed" engineers with substantial industrial experience. It is their job to understand each company's needs and apply the proper resources, be it their own knowledge, that of university faculty, that of a university facility, or even that of an outside resource. We have found the vast majority of our faculty very willing to participate in this stimulating effort, even without salary incentives; and they are directly involved in close to 50% of our assistance efforts.

I certainly do not suggest that university research should just dance to industry's tune, but in today's environment a research university that ignores industrial interfaces will sooner or later find itself inconsequential to its community.

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### REFERENCES

1. R. H. Waterman, Jr., in R. N. Foster, *Innovation: The Attacker's Advantage* (Summit, New York, 1986), p. 17.

*Erratum:* The last sentence of the fourth paragraph of Devra Lee Davis' letter "Paleolithic diet, evolution, and carcinogens" (18 Dec., p. 1663) contained errors. It should have read, "Moreover, the range of early diets was extensive, from protein-rich diets of far northern peoples to the plant-dependent diets of the Kalahari hunters and gatherers."

*Erratum:* In the report "Stimulation of heterotrophic microplankton production by resuspended marine sediments" by Sam C. Wainright (18 Dec., p. 1710), two articles should not have been included in reference 2. These are G. T. Rowe, C. H. Clifford, K. L. Smith, Jr., P. L. Hamilton, *Nature (London)* **255**, 215 (1975) and S. W. Nixon, C. A. Oviatt, S. S. Hale, in *The Role of Terrestrial and Aquatic Organisms in Decomposition Processes*, J. M. Anderson and A. MacFadyen, Eds. (Blackwell, Oxford, England, 1976), pp. 269-283.