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CONFERENCE IN CRETE

Phase transformations in solids

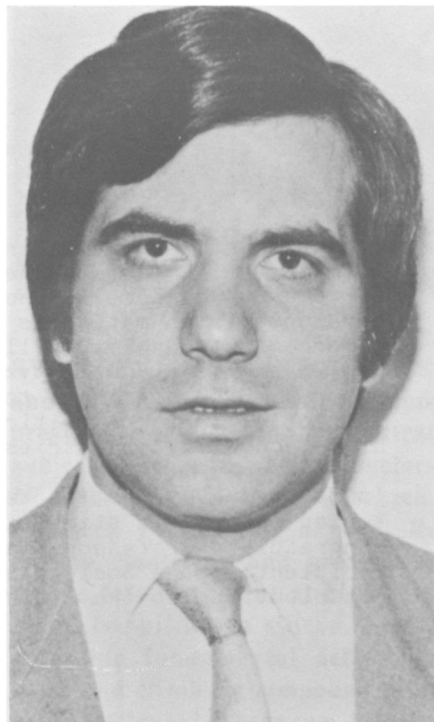
Phase transformations in solids is the subject of an MRS-sponsored symposium to be held on the Mediterranean island of Crete June 27-July 1. This is the second of the Society's symposia to be held outside the United States.

Jointly sponsored by the National Technical School of Crete and Rutgers University, the symposium seeks to bring together scientists and researchers from such areas as metallurgy, materials science and engineering, solid state physics, chemistry and crystallography to review and discuss current knowledge and new developments in phase transformations in solid materials, according to Thomas Tsakalacos of Rutgers' Department of Mechanics and Materials Science, conference chairman.

Tsakalacos said invited speakers will lecture on such subjects as general theories of phase transitions, crystallography, symmetry and morphology, diffraction methods, statistical mechanics and computer simulations, order-disorder phenomena, long-period ordered structures, properties-microstructure relations, nucleation, growth and coarsening, G.P. zones and clustering, precipitation and kinetics, martensitic transformations and semiconductor superlattices.

Invited papers will be presented by

a distinguished group of scholars, notably A. Khatachaturyan, Academy of Sciences, U.S.S.R., D. Watanabe, Tohoku University, Japan, and M. Hillert, Royal Institute of Technology, Sweden. MRS councillor Rustum Roy, a member of the symposium's organizing committee, will be on hand to gather materials for his highly successful Educational Modules for Materials Science and



Thomas Tsakalacos

Engineering, a unique journal widely utilized by academic departments of materials science to enhance teaching materials at the graduate as well as undergraduate levels.

"In the last ten years," Tsakalacos said, "the study of solid-solid phase transformations has been expanded enormously because of their potential technological importance. . . . There is a consensus among researchers in both fundamental and applied areas that more basic understanding of phase transformations is required to explain the properties of materials and subsequently to provide a rational basis of materials selection.

"Moreover," he said, "phase transformations are of interest because they are related to a variety of atomic processes that lead to changes in the phase structure, thus often creating new states of aggregation, whose properties differ markedly from those of the parent."

Papers Invited

Tsakalacos noted that contributed papers relating to the symposium's principal areas of interest are invited, and will be selected for oral or poster presentation. One-page abstracts should be sent to him at the College of Engineering, Rutgers University, P.O. Box 909, Piscataway, NJ 08854. Invited papers and accepted contributions will be published as a

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material produced in this rapid, but not superfast, processing.

Undoubtedly the technologically most exciting area discussed at the symposium was that of lateral epitaxy of silicon on insulating, noncrystalline substrates: SOI, or silicon-on-insulator. These crystal growing processes are being carried out under a number of different conditions by different workers. They involve a wide variety of heat sources from lasers to hot graphite strips. In general, they result in thin films of crystalline silicon with thicknesses from 0.2 to 100 micrometers and with grain sizes as large as millimeters. Control of the lateral growth interface by control of thermal gradients has reached a high degree of sophistication as has the understanding of the stabilization of the growth process. Very high quality devices are being fabricated in this material which promises to have a unique role in the production of dielectrically isolated devices and in very large and inexpensive device arrays.

The symposium consisted of eight oral and one poster session. The oral sessions, which included 23 invited and 54 contributed papers, attracted audiences as large as 300, with particular interest in the sessions on energy transfer, phase transitions and crystallization of silicon on amorphous substrates. The display of



G.A. Rozgonyi (foreground), Bell Labs, at a Symposium A poster session

30 posters was available for study throughout the symposium but was specifically manned by authors on Tuesday evening, with a large number of interested participants taking advantage of the opportunity to discuss new results in depth and detail.

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number in the Materials Research Society Symposium Proceedings Series. Non-participant MRS members will be informed through the *Bulletin* of the publication of this volume, which will be offered to members at a substantial savings.

The MRS-sponsored symposium on phase transformations follows another meeting of interest to many members. It is the NATO Advanced Study Institute on Modulated Structure Materials, also held at the

Crete Chandris Hotel in Maleme, Crete. That meeting, to be held June 15-25, will include presentations on crystallography of MSM, diffraction methods, long-period ordered structures, electrical, magnetic and mechanical properties of MSM, theory and statistical mechanics of order-disorder transitions, synthetic layered structures, molecular beam epitaxy technique and semiconductor lattices.

Information about that meeting, as well as the one sponsored by the Society, is available from Tsakalacos.