

Book Review: *Multicritical Phenomena*

Multicritical Phenomena. R. Pynn and A. Skjeltrop, Eds., NATO ASI Series B, Vol. 106, Plenum Press, New York, 1984, 472 pp.

Volume 106 in the NATO Advanced Science Institute Series B contains the Proceedings of a NATO Advanced Study Institute held in Geilo, Norway, in April 1983. In the words of the organizers, the Institute was planned as a forum for the discussion of phase transitions and instabilities in systems with competing interactions and competing order parameters. Starting with a concise but clear theoretical introduction of multicriticality by M. E. Fisher, the volume contains about 20 major invited papers and an equal number of short contributed papers. The papers deal primarily with magnetic and structural phase transitions in solids. Included are discussions of static and dynamic phenomena that are predicted or observed when a tricritical point, a bicritical point, a tetracritical point, a Lipshitz point or a critical end point is present in the equilibrium phase diagram of systems. There are also some papers dealing with phase transitions in spin glasses and the volume concludes with a brief discussion of phase-transition behavior in nonequilibrium systems. The reader will not find here a review of multicritical phenomena in fluids except for some remarks about tricritical phenomena in mixtures of liquid He³ and He⁴.

The book contains a healthy balance of theoretical and experimental papers. Specifically, the quality of the invited papers is good. The past two decades have brought enormous progress in our understanding of critical phenomena. The papers provide a vivid illustration how the new concepts are being applied to a large number of complex phase transition phenomena. In spite of this development, or perhaps because of this development, the agreement between theory and experiment is by no means perfect and the book is a good reference to stimulate further research.

This volume gives an interesting picture of the rich world of phase transition phenomena and enables the reader to check the current status of research in the field.

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