Editorial

This special issue of the *Journal of Phase Equilibria* consists of papers presented at Symposium R, entitled "Alloy Modeling and Design, Part III," that took place at the TMS Annual Meeting in Indianapolis, 14-18 September 1997. The original intent was to publish a separate proceedings of the papers presented at the symposium; however, for various reasons, these plans did not materialize and the *Journal of Phase Equilibria* provided space for this special volume.

The symposium and the papers presented during that symposium represent a cross section of research into the physical, chemical, and mechanical properties of alloys. Both theoretical and experimental work was communicated. This interdisciplinary approach is particularly warranted in the study of materials properties. The development of new or improved alloys with desirable engineering and technological properties involves multi-disciplinary research teams in which expertise ranges from basic theory to practical alloy development. This was the third in a series of biennial symposia which aim at bringing together researchers in a wide range of fields who have an interest in applying the most recent advances in basic research to the development of new alloys. The symposium was comprised of four sessions over two days. Contributions focused on a broad spectrum of materials science issues, including: first-principles electronic structure theory of alloy phase stability, modeling and simulation of phase diagrams, experimental probes of atomistic and electronic structure of materials (anomalous diffuse scattering, electron microscopy, etc.) structure and properties of defects, e.g., impurities, stacking faults, APB's, grain boundaries, and their relation to mechanical properties, physical metallurgy and design of advanced alloy systems, order intermetallics, ductile vs. brittle behavior, and complex materials and phenomena, e.g., shape-memory alloys, topologically close-packed structures, quasicrystals, etc.

As the editors and organizers of this symposium, we hope that the work presented will stimulate further research into the effects of alloying in determining materials properties, and in the theoretical/computational design of new materials with novel, improved, and desirable properties.

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Symposium Co-organizer
with P.E.A. Turchi