Intermetallic Matrix Composites
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*Invited Paper

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Preface

MRS has been a leader in publishing current research results covering the area of intermetallic compound development. Three prior symposia in 1984 (Vol. 39), 1986 (Vol. 81) and 1988 (Vol. 133) were devoted primarily to monolithic ordered systems. The current volume is the first to concentrate on issues particular to intentional multiphase intermetallic systems.

Our intent was to bring together the myriad of disciplines needed to understand the complex processing-microstructure-property relationships in intermetallic matrix composite materials. It may appear to the reader that some of the work reported in this volume does not bear on this question, but it should be remembered that intermetallic compounds have properties similar to both ceramics (at low temperatures) and metals (at high temperatures). Thus the techniques for toughening brittle matrix composites at ambient temperatures as well as those for strengthening ductile matrix composites at elevated temperatures need to be applied to the intermetallic situation. For this reason, the session on microstructure-based modeling of the behavior of intermetallic matrix composites drew heavily on ceramic and metal matrix experience. The session discussing processing was also a mix of ceramic and metallurgical approaches, while stressing novel methods particular to composite microstructures. Thermodynamic compatibility and conventional microstructure-mechanical property studies made up the bulk of the contributed papers as they address a large deficiency in our understanding in this important area.

The breadth of sponsorship reflects the large number of organizations which recognize the need for intermetallic matrix composites. The sponsors were GE Aircraft Engines, Los Alamos National Laboratory, Martin Marietta Laboratories, NASA Lewis Research Center, Office of Naval Research, United Technologies Research Center, and Rockwell Science Center. Their financial support is gratefully acknowledged. In addition, we would like to thank Ms. Joyce Hurlburt for her diligent secretarial support during the meeting and assistance in compiling this proceedings afterward and to the session chairmen and all those who helped review the submitted papers.

D. Anton
P. Martin
D. Miracle
R. McMeeking

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