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Multilayers: Synthesis, Properties and Non-Electronic Applications

Editors: T. W. Barbee, F. Spaepen and L. Greer

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MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS VOLUME 103

Multilayers: Synthesis, Properties and Non-Electronic Applications

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Preface

The symposium on Multilayers: Synthesis, Properties and Non-Electronic Applications at which the papers included in this volume were presented, was organized because this is one of the most rapidly expanding areas of solid state science. This growth draws on significant advances in a number of other scientific and technological arenas. In particular, thin-film deposition techniques have in the past two decades progressed to the point that it is now possible reproducibly to prepare multilayer structures of high perfection relative to superlattice characteristics, individual layer structures, and interfacial structure. It is also important to recognize that the broad range of sophisticated and sensitive characterization tools and approaches that are now available have been central to the rapid advance of multilayer research. It is now clear that these new materials can be synthesized with structures allowing the scientific investigation of microstructure sensitive physical phenomena, and the optimization of the properties of technologically useful materials. In summary, multilayer structure research and technology represents a significant part of the forefront of what may be termed Microstructure Engineering.

We are indebted to the symposium authors, in part for presenting excellent reviews and summaries of the many areas involved in multilayer research, for presenting the results of recent investigations, and also for relating these results to fundamental properties that are important in this area of materials science. The editors also thank all participants, session chairs, reviewers, and MRS staff and program officials for their help and guidance in organizing the symposium and publishing this volume.

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