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978-1-107-41358-0 - Atomistic Mechanisms in Beam Synthesis and Irradiation of Materials

Edited by J.C. Barbour, S. Roorda, D. Ila and M. Tsujioka

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Atomistic Mechanisms in Beam Synthesis and Irradiation of Materials

Symposium held December 1–2, 1997, Boston, Massachusetts, U.S.A.

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PREFACE

This proceedings volume represents 70% of the papers presented December 1–2, 1997, in Symposium KK, “Atomistic Mechanisms in Beam Synthesis and Irradiation of Materials,” at the 1997 MRS Fall Meeting in Boston, Massachusetts. The symposium focused on understanding the atomistic processes that occur in metals, ceramics (including glasses), and polymers exposed to energetic beams for the purpose of synthesizing or modifying a material. The work presented, in 47 oral and 60 poster presentations over two days, was similar in focus to that traditionally presented in previous years in Symposium A. However, this symposium tried to give greater emphasis to work discussing atomistic approaches for modelling and understanding experimental results. The organization of this symposium, with the large number of poster presentations, was intended to create a smaller meeting atmosphere with greater one-on-one interaction between the participants. The enthusiastic participation in both the oral and poster sessions was testimony to the continued interest in beam-based materials research.

The science presented in this symposium fell into the following categories: (i) surface and thin-film microstructures driven by ion-beam processing, including mechanisms driving preferential orientation in single-crystal and polycrystalline formation; (ii) comparisons and contrasts in the mechanisms involved with high-energy ion-beam irradiation and high fluence-rate effects; (iii) identification of mechanisms in beam-assisted synthesis of materials; and (iv) atomistic modelling to describe improved mechanical and optical properties of coatings and layers treated with ion beams. The papers in this volume have been divided in accordance with the topical divisions used for the oral presentations.

J.C. Barbour

S. Roorda

D. Ila

M. Tsujioka

November 1998

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Sebania Libertino
Marcel Toulemonde
Robert C. Birtcher
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