

# The Third International Conference on Recrystallization and Grain Growth ReX & GG III

held on Jeju Island, Korea

June 10-15, 2007



## Organized by

The Korean Institute of Metals and Materials (KIM)

The Japan Institute of Metals (JIM), JIMIC-6

The Iron and Steel Institute of Japan (ISIJ)

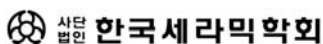


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# The Third International Conference on Recrystallization and Grain Growth

## ReX & GG III

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## Preface

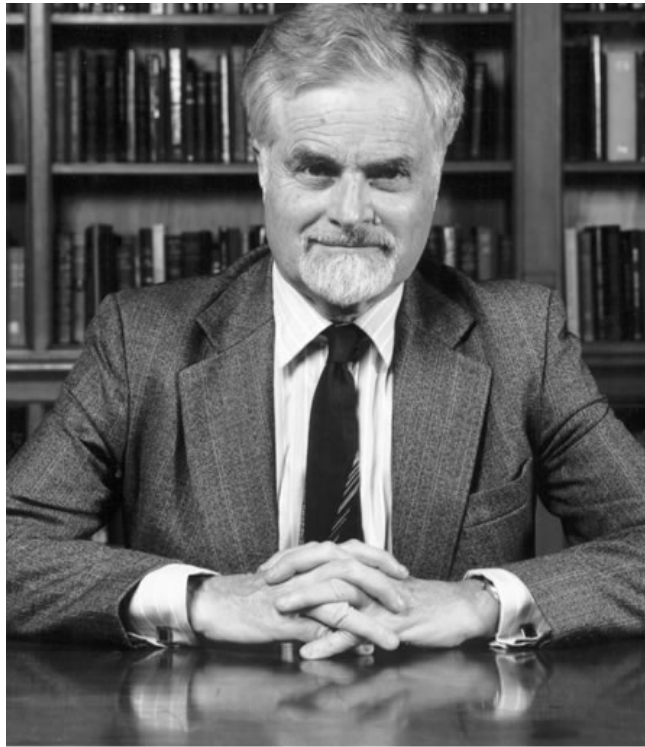
These proceedings are a collection of 235 papers presented at the Third International Conference on Recrystallization and Grain Growth (ReX & GG III), held on Jeju Island, Korea, on June 10-15, 2007, as a continuation of the First Joint Conference on Recrystallization and Grain Growth in Aachen (Germany) in 2001 and the Second Conference in Annecy (France) in 2004. With the globalization of science, technology, and industry, the demand for international collaboration and knowledge exchange through international meetings such as this conference are ever increasing. It is thus meaningful that Korea and Japan jointly hold ReX & GG III in Asia, after the two precedent conferences in Europe.

Recrystallization and grain growth are common phenomena occurring during thermal or thermomechanical processing of materials, including metals and ceramics, and in related industrial applications. The papers in these proceedings report on research from 30 different nations and cover recent advancements in theories, experiments, and simulations of recrystallization and grain growth, and the related properties of materials. The invited and contributed papers are categorized into (1) Static recovery, recrystallization, and related properties; (2) Dynamic recovery, recrystallization, and elevated temperature deformation; (3) Grain growth and related properties; (4) Grain boundary/Interface structure and microstructure development; (5) Computer simulation and modeling; (6) Recrystallization and grain growth in ceramics and thin films; (7) Nanocrystallization and grain growth; and (8) Other microstructure-related topics. We hope that the readers will find the most up-to-date advances in the fundamental phenomena of microstructure evolution and their applications with related properties.

We would like to thank the authors and editors for their valuable contributions to these proceedings.

Suk-Joong L. Kang and Yuichi Ikuhara  
Co-Chairmen, Organizing Committee

The Third International Conference on Recrystallization and Grain Growth

**Robert W. Cahn, Fellow of the Royal Society (1924-2007)****Robert Cahn, at Sussex University**

Robert Cahn proposed, in 1950, very early in his scientific career, that the origin of recrystallization in deformed metals was the evolution of polygonized deformation cells into recrystallization nuclei. That idea, supplemented by Alan Cottrell's insight (1953) into the low mobility of most of the cell boundaries, so that only sub-grains close to high misorientations giving high mobility could grow, has provided the basis for our current understanding of nucleation in deformed metals and thus of recrystallization generally. Robert made many other contributions to the study of the annealing of deformed metals: particularly on recovery, on recrystallization of porous and of shock loaded metals and on recrystallization processes in ordered alloys. However, because of his extraordinarily wide interests, recrystallization was only one of the many topics to which he contributed in very significant ways. These other scientific topics include: the crystallography of uranium, mechanical twinning, ordering and intermetallic alloys, and, later in his career, many aspects of highly metastable alloys. He contributed not only by the extensive research that he and his students and colleagues published but also by the many review articles that he wrote and by the four research journals, the three encyclopaedias and the series of three textbooks that he edited. One of the latter, "Physical Metallurgy", went through four editions with the last two being co-edited with the late Peter Haasen: it was described by one reviewer as "the bible of

our field". In the fourth edition (1996) there were two classic reviews written by Robert, one co-written with Lindsay Greer on "Metastable States of Alloys" and one on "Recovery and Recrystallization" that well illustrate his continued breadth of active interests.

Not only was Robert a very successful scientist, he was also a very fine man. He was always interested in and very helpful to younger students and colleagues, providing an ideal model of what a generous scientific mentor can be. For several of his students and younger colleagues he gave invaluable help by passing on to his young collaborators the subject that they had studied together, while he moved on to newer fields of study. Such scientific generosity is the mark not only of a really fine mentor but also of an extremely creative scientist. Our field, and much of materials science, has lost a major figure. However his influence on science and on his many friends and colleagues will continue into the future.

Roger D. Doherty

(Drexel University, Philadelphia USA. Previously (1965-1982) at the University of Sussex Brighton UK.)

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1996 R.W. Cahn and L. Greer "Metastable States of Alloys" and R.W. Cahn "Recovery and Recrystallization" in "Physical Metallurgy" . 4<sup>th</sup> Edition, Eds. R.W. Cahn and P. Haasen, Elsevier Science.