FORWORD

The steadily increasing capability of computer systems in terms of speed and information storage stimulates the extensive employment of computer simulation in texture research. Texture simulations should meet two main requirements. First, they should improve our insight into the physical principles that govern the complex nature of texture and microstructure evolution. Second, they should provide a convenient means of predicting texture dependent materials behaviour for technical applications under conditions that have not yet been studied or that are not amenable to experiment.

Although substantial progress was attained in both domains, the *organisation* of the simulation activities could be improved:

It is a typical observation in computational materials science that an increasing number of models is introduced to tackle similar or identical metallurgical phenomena often without comparing them to other approaches that already exist. The notion *comparison* does in this context not mean to list some common or distinguishing features of competitive models, but to *quantitatively* compare them.

Such concept could be termed *round-robin test in texture simulation.*

The present issue is a suitable opportunity to suggest the general introduction of such quantitative tests. In case of polycrystal plasticity one could think of the following criteria: The simulation should address an alloy or metal with properly defined microstructural characteristics. This allows to carry out tensile or compression experiments, if required, in each laboratory that participates. The final set of results should be compared to experiment. The experiment should be carried out under properly defined conditions. The input data to the simulation should contain an identical number of discretized orientations. The method for calculating the ODFs from output data should be identical throughout. The presentation of the output data should be identical. The comparison should be published.

Similar points are conceivable for a round robin test to compare recrystallisation simulations.

This special issue of "Textures and Microstructures" comprises a number of lectures that were given on the first "Joint Meeting on Computer Simulation and Modelling in Texture Research" which was held at RWTH Aachen at the Institut für Metallkunde und Metallphysik. The meeting was organised by the DGM - Fachausschuß Texturen, the DGM – Fachausschuß Computersimulation, and the Commission Texture et Anisotropie SF2M.

The editors hope that this volume will not only provide a survey on some current aspects of texture simulation, but also render new impulses to the further development of this exciting field.

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