Preface

The problem of interrelation between diffusion and stresses is as old as the investigation of diffusion itself. Crack formations during surface oxidation, stress induced diffusion (creep, Gorsky-effect) or macroscopic deformations of diffusion couples during interdiffusion are well known classical examples. From theoretical point of view there are special peculiarities of this problem: the effect of stress field on diffusion can not be treated as a primary cross effect, but across the stress dependence of the chemical potentials. Thus the results should depend on the density and distribution of sources and sinks and on the boundary conditions. The latter is related to the fact, that atomic currents are local laws, while elastic interactions have long-range character. Beside the theoretical interest there is an increasing demand from many practical applications. Especially in thin films and multilayers the theory and experiments are in close interrelation and their interference accelerates the efficiency of the research. Investigations of reaction or diffusion controlled phase formation in massive diffusion samples (shape effects) are also promising.

In order to foster interactions between different groups working in the field we decided to organize this workshop. 46 participants coming from 11 countries, presented invited lectures and posters, which are collected in this Proceedings. In order to create a relaxed atmosphere for discussions on open problems plenty of time for questions and comments was given after each lectures and a round table session (chaired by A.L. Greer) was also help.

We hope that these Proceedings makes available the results to all interested scientists and will contribute to the development of the filed.

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