
A century of crystallographic texture research - with a special focus on the TU Clausthal-

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Abstract

At the beginning of the 1920s, with the development of X-ray methods and interdisciplinary research in physics, materials research and geosciences, numerous studies on crystal orientation started. A wide range of materials were processed by materials scientists who are still well-known today, such as Schmid and Sachs to name only two. In the 1930s, 1940s and 1950s, interest in texture research grew steadily worldwide, particularly in connection with industrial applications. 1944 Günther Wassermann accepted a professorship in metallurgy at the Clausthal Mining Academy. 1968 Wassermann organized the 1st international texture conference and many of the world's leading texture researchers met in Clausthal-Zellerfeld to discuss the status of current texture research and the relevance to industrial applications. A key presentation was given by Hans-Joachim Bunge "Textures in Three-Dimensional Pole Figures". The pioneering step in texture research was the development of mathematical methods for texture description by Bunge and Roe (1965), independently of each other. This method, which is described in Bunge's book "Mathematical Methods of Texture Analysis", is still the basis for many texture programs today. In 1976, Bunge took over the head of the institute. In conjunction with these mathematical possibilities, Bunge played a decisive role in the worldwide development of experimental methods based on neutron, hard X-ray, electron and laboratory X-rays. Today, both the mathematical methods and the experimental methods are part of the standard of successful texture analysis and Bunge was honored with many prizes and awards (e.g. Dr.h.c. from the University of Metz). Measuring techniques have been further developed to enable in-situ investigations and rapid analyses with the aid of new equipment components, e.g. robot, sample changer, detector evolution, high-temperature and loading devices. The Clausthal University of Technology has made a significant contribution to this over the last 20 years. An outlook on future developments will be given.

Keywords: Historical texture analysis, Hans Joachim Bunge, Günther Wassermann

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