

## book reviews

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**Introduction to texture analysis: macrotexture, microtexture and orientation mapping.** By Olaf Engler and Valerie Randle. Pp. 456. 2nd ed. Boca Raton: CRC Press, 2010. Price (paperback) USD 129.95. ISBN 978-1-4200-6365-3.

Most properties of materials, like the mechanical and magnetic properties, are intrinsically anisotropic, *i.e.* the value of the property depends on the crystallographic direction in which it is measured in a single crystal. Thus, polycrystalline aggregates are anisotropic, too, if the crystallographic orientation distribution, so-called texture, is nonrandom. The strength of the anisotropy depends on the type and strength of texture. Polycrystals may be technologically fabricated, like rolled metal sheets, or of natural origin, like rocks. Therefore, the determination and interpretation of textures may be of fundamental importance to materials and geoscientists. In materials technology, analysis of the texture changes during thermomechanical treatment yields valuable information about the underlying solid state processes, including deformation, recrystallization and phase transformations. In geology, texture analysis can provide insight into some of the processes rocks have experienced during their geological history.

Nowadays there are a selection of techniques available to analyze the texture of materials. These comprise the well-established methods of X-ray and neutron diffraction that give the global texture without reference to the location of individual grains within the sample (macrotexture), and modern

methods that allow the measurement of individual orientations (microtexture) in the transmission or scanning electron microscope directly related to the microstructure. The latter methods, in particular electron backscatter diffraction in the scanning electron microscope, are able to measure orientations automatically from certain areas of the microstructure (orientation mapping), thus also giving information on the grain and phase boundaries (mesotexture). The second edition of *Introduction to Texture Analysis* provides a comprehensive coverage of the range of concepts, practices and applications of the techniques for determining and representing texture while keeping the mathematics to the minimum necessary. Focus is put on the modern techniques to study micro- and mesotexture, including diffraction of high-energy synchrotron radiation. It is the strength of the book that it gives a comparison and assessment of the experimental methods for texture analysis. Moreover, a few typical examples of texture research are presented. Thus, the second edition, which is an updated, corrected and improved version with better quality of the figures (except Fig. 2.12, where the sectioning is too faint, and Fig. 6.7, where the angle does not coincide with that given in the text), is highly recommended as textbook for all students starting with texture research and also for scientists already having experience in this field.

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