



**International
Standard**

ISO 23699

**Microbeam analysis — Electron
backscatter diffraction —
Vocabulary**

*Analyse par microfaisceaux — Diffraction d'électrons
rétrodiffusés — Vocabulaire*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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This document was prepared by Technical Committee ISO/TC202, *Microbeam analysis*, Subcommittee SC1, *Terminology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Electron backscatter diffraction (EBSD) measurement is routinely and widely used to produce local orientation maps of a polished surface of bulk materials in scanning electron microscopy (SEM), via the automated recording and analysis of Kikuchi diffraction patterns. EBSD is a modern technique used to evaluate phase distribution, grain size distribution, orientation of individual grains, disorientation inside grains and grain boundary characteristics of the crystalline materials. EBSD is applied across a wide variety of fields, such as in metals processing, aerospace, nuclear, automotive and microelectronics industries, and earth sciences.

This document provides definitions of terms as they are used in the field of electron backscatter diffraction by the international scientific and engineering communities that employ the technique.

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Microbeam analysis — Electron backscatter diffraction — Vocabulary

1 Scope

This document defines terms used for the electron backscatter diffraction (EBSD) technique. This document covers both general and specific concepts classified according to their hierarchy in a systematic order.

This document is applicable to standardization documents relevant to EBSD practices. In addition, some definitions in this document are applicable to transmission Kikuchi diffraction (TKD).

2 Normative References

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Terms related to the physical basis of electron backscatter diffraction

4.1

crystal

crystal structure

entity consisting of a regular, repeated arrangement of atoms in space

Note 1 to entry: It is usually described by a space group, a crystal system, unit cell parameters (including the lengths and angles between the unit cell axes) and the positions of the atoms inside the unit cell

[SOURCE: ISO 24173:2024, 3.1, modified — the second half of the definition has been moved to "Note 1 to entry", and all original "Note" clauses removed.]

4.2

crystal unit cell

cell which is repeated (infinitely) to build up the *crystal* ([4.1](#))

Note 1 to entry: It is usually defined by three lengths, a , b , c , and three angles, α , β , γ . The lengths are usually given in nanometres and the angles in degrees.

4.3

crystal plane

plane, usually denoted as (hkl) or $(hkil)$, that represents the intersection of a plane with the a -, b -, and c -axes of the unit cell at distances of $1/h$, $1/k$, $1/l$, where h , k , and l are integers, $i=-(h+k)$

Note 1 to entry: The integers h , k , and l are usually referred to as Miller indices of a crystal plane.

[SOURCE: ISO 24173:2024, 3.2, modified — "or $(hkil)$ " and " $i=-(h+k)$ " are added, "representing" are replaced with "that represents", "the minimum mutual" are removed.]