



# Springer Handbook of Materials Measurement Methods

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**Springer Handbook of Materials Measurement Methods** From Brand: Springer

In its most general context, the term "materials measurements" denotes operations to distinguish qualitatively and to determine quantitatively characteristics of materials. As materials constitute the physical matter of all products – machines, devices, plants, commodities, means of information, communication, transport, habitation and energy supply – materials measurements have a wide scope and impact for science and technology, economy and society.

Springer Handbook of Materials Measurement Methods compiles advanced methods for materials measurement and characterization methods from the macroscopic to the nanometer scale.

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## Editorial Review

From Publishers Weekly

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Review

Aus den Rezensionen:

"Das Springer Handbuch ... umfasst fortschrittliche Methoden der Charakterisierung von Materialien vom makroskopischen Bereich bis zur Nano-Ebene. ... Dieses Buch ist das erste von dieser Art mit seinen praktischen und wichtigen Betrachtungen. ... Das Buch ist von drei international namhaften Persönlichkeiten aus nationalen Materialforschungs- und Prüfinstituten von Deutschland, Japan und USA editiert worden. Insgesamt 105 Experten haben als Autoren dazu beigetragen ..." (H. Klingelhöffer, in: Materials and Corrosion, 2008, Vol. 59, Issue 1, S. 59 f.)

From the Back Cover

*There is no science without measurements, no quality without testing, and no global markets without standards.*

(Commission of the European Union)

*This Springer Handbook of Materials Measurement Methods compiles advanced methods for materials measurement and characterization from the macroscopic to the nanometer scale. Materials science and its industrial applications require the highest level of accuracy and reliability in the measurement of the properties of materials and the assessment of their safety and reliability. Major technological nations fund large laboratories for testing and measurements that set standards, assess the safety and reliability of materials, and oversee the use of dangerous materials. Behind and beyond the data themselves are the underlying methods whose sophistication and proper use are absolutely necessary to achieve the accuracy, reliability, and safety required by modern technologies. Additionally, the acceleration of the design and creation of new materials via techniques such as molecular modeling and simulation, especially on the nanometer scale, makes the measurement of new materials properties and their characterization ever more critical.*

*Materials professionals will find clear guidelines and standards for how to measure the full spectrum of materials characteristics of new materials and systems. Since materials science forms a bridge between the*

*more traditional fields of physics, engineering, and chemistry, unifying the varying perspectives and covering the full gamut of properties also serves a useful purpose. This Springer Handbook is the first dedicated to these practical and important considerations.*

### *Key Topics*

- *Measurement Principles and Structures*
- *Measurement Strategy and Quality*
- *Measurement Methods for Composition and Structure: Chemical Composition, Nanoscopic Architecture and Microstructure, Surface and Interface Characterization*
- *Measurement Methods for Materials Properties: Mechanical, Thermal, Electrical, Magnetic, Optical*
- *Measurement Methods for Materials Performance: Corrosion, Friction and Wear, Biogenic Impact, Materials–Environment Interactions, Performance Control and Condition Monitoring*
- *Modeling and Simulation Methods*
- *International Standards*

### *Features*

- *Develops and explains clear guidelines and standards for the measurement of materials and systems characteristics*
- *Incorporates over 50 pages with latest international standards referenced in chapters (AATCC, ANSI, AS, ASTM, AWWA, BSI, DIN, EN, IEC, ISO, JIS, NF, OIML, SEP, SN, VDI)*
- *Guarantees quick access to data through parts and chapters with summaries, detailed index, and fully searchable CD-ROM*
- *Contains over 500 two-color illustrations and over 50 comprehensive tables*
- *Delivers a wealth of up-to-date references*

## **Users Review**

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#### **Maria Gray:**

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