



## PEEK biomaterials handbook

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Kurtz, Steven M. (1968-)

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Electronic books

Monografía

PEEK biomaterials are currently used in thousands of spinal fusion patients around the world every year. Durability, biocompatibility and excellent resistance to aggressive sterilization procedures make PEEK a polymer of choice, replacing metal in orthopedic implants, from spinal implants and hip replacements to finger joints and dental implants. This Handbook brings together experts in many different facets related to PEEK clinical performance as well as in the areas of materials science, tribology, and biology to provide a complete reference for specialists in the field of plastics

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**Mención de serie:** Plastics design library

**Nota general:** Two columns to the page

**Bibliografía:** Includes bibliographical references and index

**Contenido:** Front Cover; Dedication; Series page; Peek Biomaterials Handbook; Copyright; Contents; Foreword; List of Contributors; Chapter 1 - An Overview of PEEK Biomaterials; 1.1 - Introduction; 1.2 - What Is a Polymer?; 1.3 - What Is PEEK?; 1.4 - Crystallinity and PEEK; 1.5 - Thermal Transitions; 1.6 - PEEK Composites; 1.7 - Overview of This Handbook; References; Chapter 2 - Synthesis and Processing of PEEK for Surgical Implants; 2.1 - Introduction; 2.2 - Synthesis of PAEEKs; 2.3 - Nomenclature; 2.4 - Quality Systems for Medical Grade Resin Production; 2.5 - Processing of Medical Grade PEEK 2.6 - Machining 2.7 - Summary; Acknowledgments; References; Chapter 3 - Compounds and Composite Materials; 3.1 - Introduction; 3.2 - What Is a Composite Material?; 3.3 - Additive Geometry, Volume, and Orientation Effects; 3.4 - Preparation of Materials; 3.5 - Processing to Make Parts; 3.6 - Biocompatibility of CFR PEEK; 3.7 - Summary and Conclusions; References; Chapter 4 - Morphology and Crystalline Architecture of Polyaryletherketones; 4.1 - Introduction; 4.2 - Chain Architecture and Packing; 4.3 - Crystallization Behavior; 4.4 - Characterization Techniques 4.5 - Structure

Processing-Property Relationships4.6 - Summary and Conclusions; Acknowledgment; References; Chapter 5 - Fracture, Fatigue, and Notch Behavior of PEEK; 5.1 - Introduction; 5.2 - Fracture and Fatigue of Materials; 5.3 - PEEK Fracture Studies; 5.4 - PEEK Notch Studies; 5.5 - Summary; Acknowledgments; References; Chapter 6 - Chemical and Radiation Stability of PEEK; 6.1 - Introduction to Chemical Stability; 6.2 - Water Solubility; 6.3 - Thermal Stability; 6.4 - Steam Sterilization of PEEK; 6.5 - Radiation Stability: Implications for Gamma Sterilization and Postirradiation Aging 6.6 - SummaryReferences; Chapter 7 - Biocompatibility of Polyaryletheretherketone Polymers; 7.1 - Introduction; 7.2 - Cell Culture and Toxicity Studies; 7.3 - Mutagenesis (Genotoxicity); 7.4 - Immunogenesis; 7.5 - Soft Tissue Response; 7.6 - Osteocompatibility of PEEK Devices; 7.7 - Biocompatibility of PEEK Particulate-X-STOPTM PEEK Explant Studies; 7.8 - Summary and Conclusions; References; Chapter 8 - Bacterial Interactions with Polyaryletheretherketone; 8.1 - Introduction; 8.2 - Bacterial Adhesion to Biomaterials; 8.3 - The Role of Surface Topography and Chemistry in Bacterial Adhesion 8.4 - Strategies to Reduce Bacterial Adhesion to PEEK8.5 - Summary and Perspectives; References; Chapter 9 - Thermal Plasma Spray Deposition of Titanium and Hydroxyapatite on Polyaryletheretherketone Implants; 9.1 - Introduction; 9.2 - Coating Technology; 9.3 - Biomedical Plasma-Sprayed Coatings; 9.4 - Coating Analysis Methods; 9.5 - Substrate Analysis Method; 9.6 - Plasma-Sprayed Coatings on PEEK-Based Substrates; 9.7 - Plasma-Sprayed Osteointegrative Surfaces for PEEK: The Eurocoating Experience; 9.8 - Summary and Conclusions; References Chapter 10 - Surface Modification Techniques of Polyetheretherketone, Including Plasma Surface Treatment

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**Autores:** Kurtz, Steven M. ( 1968-)

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## Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- [informa@baratz.es](mailto:informa@baratz.es)