

Tribologie Der Polymere Grundlagen Und Anwendungen

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The Cementless Fixation of Hip Endoprotheses Springer-Verlag
Neben den Grundlagen der Werkstoffwissenschaft erläutern die Autoren das Verhalten von Werkstoffgruppen unter unterschiedlichen Umgebungs- und Belastungsbedingungen sowie die Gesetzmäßigkeiten der mechanischen Eigenschaften. Einen besonderen Schwerpunkt bilden die technischen Gebrauchseigenschaften der Werkstoffe und die Verfahren zur Änderung dieser Eigenschaften. Behandelt werden Stähle, Stahllegierungen, Leichtmetalle, Nichteisenmetalle, Kunststoffe, Keramiken und Verbundwerkstoffe im Hinblick auf den gesamten Bereich der technischen Anwendung.

Entwicklung eines Prognosemodells zur prozessbegleitenden Beurteilung der Montagequalität von Kolbendichtungen expert verlag
The interdisciplinary nature of tribology encompasses knowledge drawn from disciplines such as mechanical engineering, materials science, chemistry and physics. The interaction between these different fields of knowledge to achieve the final result, the control of friction and wear, is reviewed in this volume. This interdisciplinary approach has proven to be a very successful way of analysing friction and wear problems. In many cases tribology is viewed as an inaccessible subject which does not produce useful answers. In this volume the authors redress this problem by providing a comprehensive treatment of the subject. A basic feature of the book is the emphasis on describing various concepts in an accessible manner for the benefit of non-specialists. This principle is applied from the beginning of the book, where the reader is introduced to the fundamental concept of tribology. This concept is then often used to show how the various topics in tribology are interrelated to form one coherent subject. A direct graphical illustration of the mechanisms controlling tribological phenomena is presented. Carefully prepared diagrams allow rapid appreciation of the basic ideas and facts in tribology. The numerical analysis of hydrodynamic lubrication is supported by a number of computer programs which are included in the book. The control of wear is given extensive treatment with a thorough discussion of lubricant additives, solid lubricants and surface coatings. The effectiveness of coatings in suppressing specific forms of wear is analyzed together with the methods of coatings deposition. The book contains 474 figures and 44 tables. More than 1000 references are provided to give the reader access to more specialized information if required. The volume is intended to provide graduates in engineering or materials science with an understanding of the fundamental concepts of friction, wear and lubrication.

Revue M. Asm International

Der Trend zu leichteren Konstruktionen und größeren Spannweiten macht es notwendig, den dynamischen Charakter der Einwirkungen auf die Tragsicherheit und Gebrauchstauglichkeit der Bauwerke stärker als bisher zu berücksichtigen; neben aerodynamischen und seismischen Einflüssen sind es solche aus Maschinenanlagen, aus dem Straßen- und Eisenbahnverkehr sowie von Menschen induzierte Einwirkungen, und nicht

zuletzt Katastrophenlastfälle, wie Anprall, Flugzeugabsturz und anderes. Ausgehend von den Grundlagen der Dynamik werden Berechnungs- und Bewertungsverfahren unterschiedlicher Strenge dargestellt und anhand zahlreicher Beispiele praxisbezogen erläutert. Die mathematischen Verfahren werden in einem ausführlichen Anhang dargelegt, die einzelnen Kapitel sind jeweils durch umfangreiche Hinweise auf die Fachliteratur ergänzt.

Tribologie: Reibung · Verschleiß · Schmierung Springer Science & Business Media

In dem Band werden Anwendungen für feststoffgeschmierte Wälzkontakte, etwa im Maschinenbau, in der Luft- und Raumfahrt, der Lebensmittelindustrie oder der Medizintechnik, vorgestellt. Ihre Potenziale und Grenzen werden analysiert und im Theorieteil systematisch hergeleitet. Ferner werden Prüfverfahren und Prüfeinrichtungen vorgestellt und Prüfergebnisse ausführlich erläutert. Ein Schwerpunkt ist die detaillierte Beschreibung der Gestaltungsfaktoren, die Lebensdauer und Lagerperformance von feststoffgeschmierten Wälzlagern beeinflussen.

Angewandte Chemie für Ingenieure KIT Scientific Publishing

The multidisciplinary nature of tribology, the conflicting theories and approaches to it found in the literature, plus the fact that definitions of the same phenomenon often differ widely, prompted the authors to compile this work. The aim of this encyclopedia is to provide information on specific tribological terms. The entire field of tribology encompassing lubrication, friction and wear, i.e. the science and technology of interacting surfaces in relative motion, is covered. An extensive description of the chemical and biological aspects of tribology is given, including a wide range of current references and authors. The reader is also referred to relevant literature for most of the terms listed. The information presented has been made as up-to-date as possible, taking into account both the theoretical and practical nature of the subject. The encyclopedia will be an indispensable reference source in the work of engineers, chemists, physicists, metallurgists, materials and surface scientists, biotechnologists, as well as research workers in these fields.

Verschleiß metallischer Werkstoffe Springer-Verlag

Friction and Wear: Calculation Methods provides an introduction to the main theories of a new branch of mechanics known as "contact interaction of solids in relative motion." This branch is closely bound up with other sciences, especially physics and chemistry. The book analyzes the nature of friction and wear, and some theoretical relationships that link the characteristics of the processes and the properties of the contacting bodies essential for practical application of the theories in calculating friction forces and wear values. The effect of the environment on friction and wear is also considered. Finally, the requirements, which must be fulfilled by the physicomaterial properties of the materials of which contacting bodies are made and which determine their behavior in moving contacts, are formulated. The book will be of interest to a wide circle of readers, e.g. engineers, designers, machine users, and research workers, working on the production of wear-resistant materials and working on the nature of friction and wear.

Tribologie-Handbuch Elsevier

Leading readers through an extensive compilation of surface modification reactions and processes for specific tribological results, this reference compiles detailed studies on various residual stresses, reaction processes and mechanisms, heat treatment methods, plasma-based techniques, and more, for a solid understanding of surface structural change

Der Carl Hanser Verlag, 1928-1978: Bd. Ergänzung, 1978-1988 Firenze University Press

With its focus on the characterization of nanocomposites using such techniques as x-ray diffraction and spectrometry, light and electron microscopy, thermogravimetric analysis, as well as nuclear magnetic resonance and mass spectroscopy, this book helps to correctly interpret the recorded data. Each chapter introduces a particular characterization method, along with its foundations, and makes the user aware of its benefits, but also of its drawbacks. As a result, the reader will be able to reliably predict the microstructure of the synthesized polymer nanocomposite and its thermal and mechanical properties, and so assess its suitability for a particular application. Belongs on the shelf of every product engineer.

Börsenblatt für den deutschen Buchhandel KIT Scientific Publishing

Engineering with polymers is a growing technical field which requires special knowledge. Filling a need, this ready reference brings together the hard-to-get and recently acquired knowledge usually only found scattered in the original literature. At the beginning, the reference introduces plastics as a class of technical materials, gives an overview of their properties, presents plastics processing and its possible influence on the achievable quality of plastic parts. Afterwards, plastics testing is presented as a separate, practical-scientific field of work. The possibilities and fields of application of plastics testing will be discussed. This is followed by a comprehensive treatment of the individual, relevant test areas for the characterization and qualification of plastics and plastic molded parts made from them, with descriptions of the corresponding, practical test methods. A comprehensive index provides easy access to relevant information for successful engineering with plastics and suitable methods for material characterization

and for quality assurance and damage analysis of parts. Written by experienced academics and industrial researchers and developers who know the problems of plastics engineers in their daily work - and the solutions - inside out, this book offers first-hand practical knowledge and intensive discussion. The book is aimed at industry, scientists and students involved in plastics and plastic engineering and aims to help them gain the necessary understanding of polymer materials and knowledge of practical testing and evaluation of plastics.

Polymers - Opportunities and Risks I Springer-Verlag

Dieses Lehrbuch der Chemie wendet sich zuallererst an den Studenten der Ingenieurwissenschaften, aber auch jeden Ingenieur in der Praxis, der grundlegende Antworten sucht auf immer wiederkehrende Fragen aus der Chemie. Der Begriff "Chemie" wird dabei nicht eng gesehen, sondern auch auf physikalische Vorgänge ausgedehnt. Das Buch gibt zunächst eine Einführung in die chemischen Grundlagen, wobei das chemische Rechnen auf moderner Basis einen bedeutenden Platz einnimmt. Spezielle Kapitel befassen sich u.a. mit Wasserchemie, anorganischen Bindemitteln, grenzflächenaktiven Stoffen, Brennstoffen, Schmierstoffen, Kunststoffen und Korrosion.

Tribologie und Schmierung bei der Massivumformung John Wiley & Sons

Die derzeitige Entwicklung der Hochtechnologie ist geprägt durch steigende Anforderungen an die Leistungsfähigkeit, Zuverlässigkeit, Wirtschaftlichkeit und Flexibilität technischer Produkte. Eine Schlüsselrolle dabei spielt die Beherrschung tribologischer Prozesse und in diesem Sinne die funktionsintegrierte Entwicklung neuartiger, tribologisch optimierter, Kunststoffe bzw. polymerbasierter Verbunde sowie zugehöriger Bauweisen und Technologien.

Kontaktmechanik und Reibung expert verlag

Much research has been carried out and a lot of progress has been made towards the use of composite materials in a wide field of tribological applications. In recent years studies have been made to determine to what degree phenomena governing the tribological performance of composites can be generalized and to consolidate interdisciplinary information for polymer-, metal- and ceramic matrix composites. The importance of promoting better knowledge in the areas of friction, lubrication and wear, in general, is demonstrated by the contents of this volume. It covers a wide range of subjects extending from fundamental research on the tribological characteristics of various multi-phase materials up to final applications of composites in wear loaded, technical components. Besides the emphasis on composites tribology, the great practical aspect of the field in many industrial applications is also reviewed by authors who are engaged in applied research as well as those in more academic activities. The articles in this volume will facilitate both researchers and mechanical designers in their work towards a set of predictive, materials engineering-related models for a more reliable use of composites as tribo-materials. Through the study of, and observation of, the tribology of sensibly formulated composite systems may emerge a clear and more profound understanding of the subject of tribology. In this sense, this book offers a major and critical evaluation of the state of understanding of the principles of tribology and its ability to serve the practical and commercial needs of this technology generally, and particularly in the context of composite systems.

Practical Testing and Evaluation of Plastics Springer-Verlag

100 Jahre DUBBEL 1914 erschien die erste Auflage des Taschenbuches für den Maschinenbau, herausgegeben von Heinrich Dubbel. Seitdem ist der DUBBEL das Standardwerk der Ingenieure in Studium und Beruf mit den Schwerpunkten „Allgemeiner Maschinenbau“ sowie „Verfahrens- und Systemtechnik“. Die laufende Neubearbeitung garantiert die Dokumentation des aktuellen Stands der Technik. Dieses etablierte Referenzwerk mit „Norm-Charakter“ überzeugt durch detaillierte Konstruktionszeichnungen - Tabellen und Diagramme mit quantitativen Angaben - Berechnungsverfahren - ein umfangreiches Literaturverzeichnis Der DUBBEL stellt das erforderliche Basis- und Detailwissen des Maschinenbaus zur Verfügung. Für die Jubiläumsumlage wurden alle Kapitel aktualisiert. Neu hinzugekommen ist die Medizintechnik, die fertigungstechnischen Kapitel wurden stark überarbeitet. Auch erhalten die Leser des Werkes Zugang zur MDesign Formelsammlung. Die ausführliche Darstellung der Mathematik ist als DUBBEL Mathematik separat erhältlich.

Schmierungstechnik Elsevier

Since their first industrial use polymers have gained a tremendous success. The two volumes of "Polymers - Opportunities and Risks" elaborate on both their potentials and on the impact on the environment arising from their production and applications. Volume 11 "Polymers - Opportunities and Risks I: General and Environmental Aspects" is dedicated to the basics of the engineering of polymers - always with a view to possible environmental implications. Topics include: materials, processing, designing, surfaces, the utilization phase, recycling, and depositing. Volume 12 "Polymers - Opportunities and Risks II: Sustainability, Product Design and Processing" highlights raw materials and renewable polymers, sustainability, additives for manufacture and processing, melt modification, biodegradation, adhesive

technologies, and solar applications. All contributions were written by leading experts with substantial practical experience in their fields. They are an invaluable source of information not only for scientists, but also for environmental managers and decision makers.

Encyclopedia of Tribology Springer-Verlag

Mechanisms of wear, friction and lubrication are comprehensively described in an accessible manner that is designed to be helpful to non-specialists. The control of wear is given extensive treatment with a thorough discussion of lubricant additives, solid lubricants and surface coatings. The effectiveness of coatings in suppressing specific forms of wear is described together with the methods of coating deposition. More than 1000 references are provided to give the reader access to more specialized information if required.

Bibliographie Internationale Des Recensions de la Litt É rature Savante Walter de Gruyter

This book explains how to improve the validity, reliability, and repeatability of slip resistance assessments amongst a range of shoes, floors, and environments from an engineering metrology viewpoint—covering theoretical and experimental aspects of slip resistance mechanics and mechanisms. Pedestrian falls resulting from slips or falls are one of the foremost causes of fatal and non-fatal injuries that limit people ' s functionality. There have been prolonged efforts globally to identify and understand their main causes and reduce their frequency and severity. This book deals with large volumes of information on tribological characteristics such as friction and wear behaviours of the shoes and floors and their interactive impacts on slip resistance performances. Readers are introduced to theoretical concepts and models and collected evidence on slip resistance properties amongst a range of shoe and floor types and materials under various ambulatory settings. These approaches can be used to develop secure design strategies against fall incidents and provide a great step forward to build safer shoes, floors, and walking/working environments for industries and communities around the world. The book includes many case studies.

Dubbel Butterworth-Heinemann

Der Band f ü hrt in den Zusammenhang von Kontaktmechanik und Reibung ein und erm ö glicht damit ein tieferes Verst ä ndnis der Tribologie. Die Ph ä nomene Kontakt, Adh ä sion, Kapillarkr ä fte, Reibung, Schmierung und Verschlei ß behandelt der Autor unter einem einheitlichen Gesichtspunkt. Er erl ä utert Methoden zur groben Absch ä tzung von tribologischen Gr ö ß en und zur analytischen Berechnung sowie den Ü bergang zur numerischen Simulation. Die 2. Auflage wurde um ein Kapitel zu Erdbeben und Reibung, einen Abschnitt ü ber Elastohydrodynamik und 10 Aufgaben erg ä nzt.

Friction and Wear Springer Science & Business Media

Dieses Fachbuch ist vor allem f ü r die praktische Arbeit des Ingenieurs gedacht und zeigt den richtigen Umgang anhand zahlreicher Schadensbeispiele. Au ß erdem gibt es zuverl ä ssige Hilfestellung bei der Analyse und Beurteilung von Verschlei ß problemen. Weiterhin beschreibt es geeignete Ma ß nahmen f ü r die Optimierung von Sicherheit und Zuverl ä ssigkeit beim Betrieb von Anlagen und Maschinen. Die neue aktuelle Auflage enth ä lt an jedem Hauptkapitelanfang Kurzzusammenfassungen zur schnellen Orientierung. Die Qualit ä t einzelner Bilder wurde verbessert.

Konstruktion CRC Press

Durch Reibung und Verschlei ß entstehen in der Industrie erhebliche Verluste, die mit ü ber 39 Milliarden DM pro Jahr in der Bundesrepublik Deutschland abgesch ä tzt werden. Um diese Verluste zu senken, f ü hrt das Bundesministerium f ü r Forschung und Technologie mit ca. 50 Millionen DM Bundesmitteln ein F ö rderprogramm Tribologie, Reibung - Verschlei ß - Schmierung durch. Bei Hochschulen, Industrie und anderen Forschungseinrichtungen wurden und werden ca. 180 praxisbezogene Forschungs- und Entwicklungsvorhaben gef ö rdert, die bei Maschinen und technischen Anlagen eine Lebensdauerverl ä ngerung, Einsparung von Rohstoffen und Energie, Produktionsausfallminderung und Verbesserung des Umweltschutzes zum Ziel haben. In der Dokumentation Tribologie, Reibung - Verschlei ß - Schmierung werden Ergebnisse dieses F ö rderprogramms sowie eine Aufbereitung der Vorhaben mit einem Tribologie-Thesaurus ver ö ffentlicht. Der zw ö lfte Band enth ä lt neue Berichte zu den Themenkreisen einiger der seit 1981 erschienenen B ä nde und stellt damit eine aktuelle Fortf ü hrung dar.

Tribologie Polymerbasierter Verbundwerkstoffe Elsevier

The main problem with regard to alloplastic joints is the loosening of the implant. Twenty years ago, Charnley first introduced bone cement to hip surgery, enabling total hip replacement to be practised on a larger scale. There is no question, however, that new approaches must be found to solving the problems of implant loosening, either by developing a new type of cement or by directly anchoring the implant without using ce ment. Much research has been done in this direction in recent years. The methods which have already been tested or are currently being tested were presented and discussed at a symposium on Cementless Fixation of Endoprostheses organized by the Orthopaedic Clinic of the University of Basel and held on 24-26 June 1982. Various possible ap proaches which might be realized in practice were discussed in a relaxed atmosphere. In addition to the biomechanical bases of cementless fixa tion of endoprostheses, the various models were discussed, with special regard to their biocompatibility, physical characteristics, design, clinical applicability, and previous clinical experience. This book contains the papers delivered at this symposium.