1. Record Nr. UNINA9910349443003321

Autore	Shih Albert J
Titolo	Metal and Bone Drilling - The Thermal Aspects / / by Albert J. Shih, Bruce L. Tai, Rui Li
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-26047-X
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (XIV, 165 p. 121 illus., 100 illus. in color.)
Disciplina	610.28 621.952
Soggetti	Biomedical engineering Surgery Metals Thermodynamics Heat engineering Heat - Transmission Mass transfer Biomedical Engineering/Biotechnology Biomedical Engineering and Bioengineering General Surgery Metallic Materials Engineering Thermodynamics, Heat and Mass Transfer
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Introduction -- Chapter 2. Experimental Analysis of Titanium Drilling -- Chapter 3. Modeling of Drill Temperature and Thermal Stress in Titanium Drilling -- Chapter 4. Analysis of Cast Iron Drilling in Dry and MQL conditions -- Chapter 5. Modeling of Workpiece Temperature and Thermal Expansion in MQL Drilling -- Chapter 6. Experimental Study of Bone Temperature in Drilling -- Chapter 7. Model-Based Approach for Predicting Thermal Damage in Bone Drilling -- Chapter 8. Advancements of Surgical Bone Drills – a Case study of Notched K-wires.

Sommario/riassunto

This book introduces state-of-the-art experimental and numerical methods and examples for evaluating the drilling performance of engineering and biological materials, particularly in thermal aspects. The authors use a common pathway to present the technological and analytical methods for both industry (metal) drilling and orthopaedic surgery (bone) drilling research, making this book a resource for both industrial and clinical readers who wish to understand the evolution of technologies, techniques, and challenges in drilling. The authors also focus on advanced engineering materials, such as titanium alloys and high-strength cast irons, which have broad applications in the automotive, aerospace, medical device, and sports industries. This book is a must-read for a broad audience, including engineering students in upper-level undergraduate and graduate courses that involve machining processes; for surgery residents, fellows, and practicing surgeons; and for engineers in the medical device industry who develop new bone cutting tools. Bridges the knowledge on drilling from the manufacturing industry to healthcare; Covers the experimental and modeling aspects of drilling thermal analysis; Includes experimental studies that contain parameters and data that emulate practical production and clinical drilling.