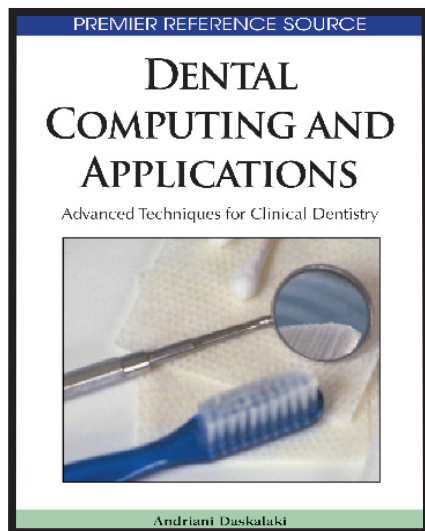


New Release

April 2009

## Dental Computing and Applications: Advanced Techniques for Clinical Dentistry



**Edited by: Andriani Daskalaki, Max Planck Institute for Molecular Genetics, Germany**

13-digit ISBN: 978-1-60566-292-3

406 pages; 2009 Copyright

Price: US \$225.00 (hardcover\*)

Pre-pub price<sup>§</sup>: US \$210.00

Perpetual Access: US \$340.00

Print + Perpetual Access: US \$450.00

Illustrations: figures, tables (8 1/2" x 11")

Translation Rights: World

\*Paperback is not available. <sup>§</sup>Pre-pub price is good through one month after publication.

**“This book provides information for both informatic researchers and also medical doctors in obtaining a greater understanding of the concepts, issues, problems, trends, challenges and opportunities related to this field of study.”**

**- Andriani Daskalaki, Max Planck Institute for Molecular Genetics, Germany**

Over the last 40 years, dental informatics has implemented numerous technological advancements and discoveries to become a medical research discipline of significant scale and scope.

**Dental Computing and Applications: Advanced Techniques for Clinical Dentistry** presents the latest technological applications and advanced research findings of computing in clinical dentistry. This book leads students and advanced researchers to an understanding of current ideas in the analysis of dental data and provides an overview on searching for evidence-based medical and dental information on the Web.

### Subject:

Medical Technologies; Bioinformatics; Human Aspects of Technology; IT Education; Software/Systems Design

### Market:

This essential publication will be a useful addition to all academic, research, and medical libraries, as well as all those interested in the most recent advances in dentistry and medical technology. Dental professionals, medical imaging technologists, healthcare administrators, and researchers in these fields will find this reference invaluable. Practitioners, educators, students, and administrators in a full range of medical and IT-related fields will also benefit.



Excellent addition to your library! Recommend to your acquisitions librarian.

[www.info-sci-ref.com](http://www.info-sci-ref.com)

# Dental Computing and Applications: Advanced Techniques for Clinical Dentistry

Edited by: **Andriani Daskalaki**, Max Planck Institute for Molecular Genetics, Germany

## Table of Contents

### Section I: Software Support in Clinical Dentistry

*Chapter I: Software Support for Advanced Cephalometric Analysis in Orthodontics*

Demetrios J Halazonetis, University of Athens, Greece

*Chapter II: A New Software Environment for 3D-Time Series Analysis*

Jörg Hendricks, University of Leipzig, Germany

Gert Wollny, Universidad Politécnica de Madrid, Spain

Alexander Hemprich, University of Leipzig, Germany

Thomas Hierl, University of Leipzig, Germany

*Chapter III: Relationship Between Shrinkage and Stress*

Antheunis Versluis, University of Minnesota, USA

Daraneer Tantbiroj, University of Minnesota, USA

*Chapter IV: An Objective Registration Method For Mandible Alignment*

Andreas Vogel, Institut für Medizin- und Dentaltechnologie GmbH, Germany

### Section II: Software Support in Oral Surgery

*Chapter V: Requirements for a Universal Image Analysis Tool in Dentistry and Oral and Maxillofacial Surgery*

Thomas Hierl, University of Leipzig, Germany

Heike Hümpfner-Hierl, University of Leipzig, Germany

Daniel Kruber, University of Leipzig, Germany

Thomas Gäbler, University of Leipzig, Germany

Alexander Hemprich, University of Leipzig, Germany

*Chapter VI: Denoising and Contrast Enhancement in Dental Radiography*

N. A. Borghese, University of Milano, Italy

I. Frosio, University of Milano, Italy

*Chapter VII: 3D Reconstructions from Few Projections in Oral Radiology*

Ralf KW Schulze, Klinikum der Johannes Gutenberg Universität, Germany

### Section III: Software Support in Tissue Regeneration Proceedings in Dentistry

*Chapter VIII: Advances and Trends in Tissue Engineering of Teeth*

Shital Patel, Swinburne University of Technology, Australia

Yos Morsi, Swinburne University of Technology, Australia

*Chapter IX: Automated Bacterial Colony Counting for Clonogenic Assay*

Wei-Bang Chen, University of Alabama at Birmingham, USA

Chengcui Zhang, University of Alabama at Birmingham, USA

### Section IV: Software Support in Dental Implantology

*Chapter X: A New System in Guided Surgery: The Flatguide™ System*

Michele Jacotti, Private Practice, Italy

Domenico Ciambrone, NRGYSYS ltd, Italy

*Chapter XI: Visualization and Modelling in Dental Implantology*

Ferenc Pongracz, Albadent Inc, Hungary

*Chapter XII: Finite Element Analysis and its Application in Dental Implant Research*

Antonios Zampelis, School of Applied Mathematics and Physical Sciences, Greece

George Tsamasphyros, School of Applied Mathematics and Physical Sciences, Greece

### Section V: Software Support in Clinical Dental Management and Education

*Chapter XIII: Electronic Oral Health Records in Practice and Research*

Amit Chattopadhyay, University of Kentucky, USA

Tiago Coelho de Souza, University of Kentucky, USA

Oscar Arevalo, University of Kentucky, USA

*Chapter XIV: Haptic-Based Virtual Reality Dental Simulator as an Educational Tool*

Maxim Kolesnikov, University of Illinois at Chicago, USA

Arnold D. Steinberg, University of Illinois at Chicago, USA

Miloš Žefran, University of Illinois at Chicago, USA

*Chapter XV: Digital Library for Dental Biomaterials*

Anka Letic-Gavrilovic, International Clinic for Neo-Organs – ICNO, Italy

*Chapter XVI: Rapid Prototyping and Dental Applications*

Petros Koidis, Aristotle University of Thessaloniki, Greece

Marianthi Manda, Aristotle University of Thessaloniki, Greece

*Chapter XVII: Unicode Characters for Human Dentition: New Foundation For Standardized Data Exchange and Notation in Countries Employing Double-Byte Character Sets*

Hiroo Tamagawa, Japan Association for Medical Informatics, Japan

Hideaki Amano, Japan Association for Medical Informatics, Japan

Naoji Hayashi, Japan Association for Medical Informatics, Japan

Yasuyuki Hirose, Japan Association for Medical Informatics, Japan

Masatoshi Hitaka, Japan Association for Medical Informatics, Japan

Noriaki Morimoto, Japan Association for Medical Informatics, Japan

Hideaki Narusawa, Japan Association for Medical Informatics, Japan

Ichiro Suzuki, Japan Association for Medical Informatics, Japan

*Chapter XVIII: Virtual Dental Patient: A 3D Oral Cavity Model and Its Use in Haptics-Based Virtual Reality Cavity Preparation in Endodontics*

Ioannis Marras, Aristotle University of Thessaloniki, Greece

Nikos Nikolaidis, Aristotle University of Thessaloniki, Greece

Georgios Mikrogeorgis, Aristotle University of Thessaloniki, Greece

Kleoniki Lyroudia, Aristotle University of Thessaloniki, Greece

Ioannis Pitas, Aristotle University of Thessaloniki, Greece

## Topics Covered:

- Dental biomaterials
- Dental implantology
- Dental radiography
- Electronic health records
- Implant research
- Rapid prototyping and dental applications
- Software support in clinical dentistry
- Software support in oral surgery
- Tissue engineering of teeth
- Virtual reality dental simulator

### About the Editor:

**Andriani Daskalaki** presently works in the field of molecular medicine and bioinformatics at the Max Planck Institute for Molecular Genetics in Berlin. She completed her PhD in 2002 on working in the applications of photodynamic therapy in the area of oral medicine from the Free University of Berlin. She received a two-year DAAD scholarship (1996-1998) for her research in the field of PDT. Dr. Daskalaki received a MS in Medical Informatics from TFH Berlin with her work in "Development of a documentation software for robot-assisted intraoral operations" and a MS degree in bioinformatics with her work in "Variance analysis of multifactor models in gene expression experiments with application to the identification of genetic markers for hypertension." She received a poster prize for her participation in the International Photodynamic Association Meeting in Nantes. She is the editor of the "Handbook of Research on Systems Biology Applications in Medicine" and has presented many oral presentations at national and international meetings. She is a founding member and committee member of the Greek Dental Laser Association. Her research interest areas include systems biology, PDT, and laser applications in dentistry.

**Excellent addition to your library! Recommend to your acquisitions librarian.**

[www.info-sci-ref.com](http://www.info-sci-ref.com)