

BIOMEDICAL ENGINEERING BIOMEDIZINISCHE TECHNIK

*Joint journal of the German Society for Biomedical
Engineering in VDE and the Austrian and Swiss Societies
for Biomedical Engineering and the German Society of Biomaterials*

EDITOR-IN-CHIEF

Jens Haueisen, Ilmenau, Germany

ASSOCIATE EDITORS

Peter Augat, Murnau, Germany

Daniel Baumgarten, Hall, Austria

Thomas Deserno, Braunschweig, Germany

Frédéric Heim, Mulhouse, France

Wilhelm Jahnen-Dechent, Aachen, Germany

Steffen Leonhardt, Aachen, Germany

Klaus Radermacher, Aachen, Germany

Erik Schkommodau, Muttentz, Germany

Thomas Stieglitz, Freiburg, Germany

Gudrun Wagenknecht, Jülich, Germany

EDITORIAL BOARD

Ulrich Boenick, Berlin, Germany

Olaf Dössel, Karlsruhe, Germany

Pamela Habibovic, Maastricht, Netherlands

Branislav Jaramaz, Pittsburgh

Marc Kraft, Berlin, Germany

Thomas Lenarz, Hannover, Germany

Harry van Lenthe, Leuven, Belgium

Benny Lo, London, UK

Luca Mainardi, Milano, Italy

Silvestro Micera, Lausanne, Switzerland

Thomas Penzel, Berlin, Germany

Andrea Robitzki, Karlsruhe, Germany

Klaus-Peter Schmitz, Rostock, Germany

Tobias Schaeffter, Berlin, Germany

Jess G. Snedeker, Zurich, Switzerland

Leif Sörnmo, Lund, Sweden

Nobuhiko Sugano, Osaka, Japan

Jürgen Werner, Bochum, Germany

Werner Wolf, Neubiberg, Germany

DE GRUYTER

ABSTRACTED/INDEXED IN Baidu Scholar · Cabells Journalytics · Chemical Abstracts Service (CAS): CAPlus; SciFinder · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · Dimensions · EBSCO (relevant databases) · EBSCO Discovery Service · Ei Compendex · EMBASE · EMCare · Engineering Village · Genamics JournalSeek · Google Scholar · Inspec · Japan Science and Technology Agency (JST) · J-Gate · Journal Citation Reports/Science Edition · JournalGuide · JournalTOCs · KESLI-NDSL (Korean National Discovery for Science Leaders) · Medline · MyScienceWork · Naver Academic · Naviga (Softweco) · Norwegian Register for Scientific Journals, Series and Publishers · Primo Central (ExLibris) · ProQuest (relevant databases) · Publons · PubMed · PubsHub · QOAM (Quality Open Access Market) · ReadCube · Reaxys · Scilit · SCImago (SJR) · SCOPUS · Semantic Scholar · Sherpa/RoMEO · Summon (ProQuest) · TDNet · TEMA Technik und Management · Text Mining · Ulrich's Periodicals Directory/ulrichsweb · WanFang Data · Web of Science: Biological Abstracts; BIOSIS Previews; Current Contents/Clinical Medicine; Science Citation Index Expanded · WorldCat (OCLC) · X-MOL · Yewno Discover

Joint Journal of the German Society for Biomedical Engineering in VDE and the Austrian and Swiss Societies for Biomedical Engineering and the German Society of Biomaterials.

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions or liability for the results obtained from use of the information, or parts thereof, contained in this work.

The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

ISSN 0013-5585 · e-ISSN 1862-278X · CODEN BMZTA7

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/bmt.

RESPONSIBLE EDITOR Prof. Dr. Jens Haueisen, Institut für Biomedizinische Technik und Informatik (BMTI), Technische Universität Ilmenau, Gustav-Kirchhoff-Str. 2, 98693 Ilmenau, Germany. E-mail: jens.haueisen@tu-ilmenau.de

PUBLISHER Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

JOURNAL COORDINATOR Torsten Krüger, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05–176, Fax: +49 (0)30 260 05–352, E-mail: bmt.editorial@degruyter.com

ADVERTISEMENTS E-mail: anzeigen@degruyter.com

© 2024 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING TNQ Tech Private Limited, Chennai, India

PRINTING Franz X. Stückerle Druck und Verlag e.K., Ettenheim



Offenlegung der Inhaber und Beteiligungsverhältnisse gem. § 7a Abs. 1 Ziff. 1, Abs. 2 Ziff. 3 des Berliner Pressegesetzes: Die Gesellschafter der Walter de Gruyter GmbH sind: Erbgemeinschaft Cram, Gisela bestehend aus Dr. Georg-Martin Cram, Dr. Hans-Robert Cram und Renate Tran; Cram, Dr. Georg-Martin, Unternehmens-Systemberater, Stadtbergen; Cram, Maike, Wien (Österreich); Cram, Jens, Mannheim; Rodriguez Cram, Catharina, Mexico, DF (Mexiko); Cram, Ingrid, Betriebsleiterin, Tuxpan/Michoacan (Mexiko); Cram, Sabina, Mexico, DF (Mexiko); Cram, Silke, Wissenschaftlerin, Mexico DF (Mexiko); Cram, Björn, Aachen; Cram, Berit, Hamm; Cram-Gomez, Susana, Mexico DF (Mexiko); Cram-Heydrich, Walter, Mexico DF (Mexiko); Cram-Heydrich, Kurt, Angestellter, Cancún (Mexiko); Duvenbeck, Brigitta, Oberstudienrätin i.R., Bad Homburg; Gädeke, Gudula, M.A., Atemtherapeutin/Lehrerin, Tübingen; Gädeke, Martin, Student, Ingolstadt; Gomez Cram, Arturo Walter, Global Key Account Manager, Bonn, Gomez Cram, Ingrid Arlene, Studentin, Mexico, DF (Mexiko), Gomez Cram, Roberto, Assistant Professor, London (UK), Lubasch, Dr. Annette, Ärztin, Berlin; Schütz, Dr. Christa, Ärztin, Mannheim; Schütz, Sonja, Diplom.-Betriebswirtin (FH), Berlin; Schütz, Juliane, Berlin; Schütz, Antje, Berlin; Schütz, Valentin, Mannheim; Seils, Dorothee, Apothekerin, Stuttgart; Seils, Gabriele, Journalistin, Berlin; Seils, Christoph, Journalist, Berlin; Siebert, John-Walter, Pfarrer, Oberstenfeld; Anh Vinh Alwin Tran, Student, Zürich (Schweiz), Tran, Renate, Mediatorin, Zürich (Schweiz); Carmen Siebert, Angestellte, Kempten; Duyen Anh Johann Tran, Architekt, Zürich (Schweiz); Lang Lieu Laurin Tran, Lehrperson, Zürich (Schweiz); Duyen Mai Marie Tran, Studentin, Zürich (Schweiz); Anh Huy Merlin Tran, Schüler, Zürich (Schweiz)

Contents

Review

Alana Semenzin Rodrigues, Clóvis Lamartine de Moraes Melo Neto, Marcella Santos Januzzi, Daniela Micheline dos Santos and Marcelo Coelho Goiato

Correlation between Periotest value and implant stability quotient: a systematic review — 1

Research Articles

Zeynep Ceren Celik, Cigdem Elbek Cubukcu and Halil Celik
Surface characteristics and wettability of novel gingival col designed 3-D printed dental sectional matrices — 11

Foued Khoffi, Yosri Khalsi, Julie Chevrier, Halima Kerdjoudj, Abdel Tazibt and Frédéric Heim
Surface treatment of PET multifilament textile for biomedical applications: roughness modification and fibroblast viability assessment — 17

Nina Reinhardt, Christoph Schmitz, Stefan Milz and Matías de la Fuente
Influence of the skull bone and brain tissue on the sound field in transcranial extracorporeal shock wave therapy: an *ex vivo* study — 27

Talha Batuhan Korkut and Ahmed Rachid
A numerical study of palatal snoring — 39

Andreas Hahn, Susan Moeller, Arne Schlausch, Matilda Ekmann, Gautier de Chelle, Marie Westerlund, Frank Braatz and Winfried Mayr
Effects of a full-body electrostimulation garment application in a cohort of subjects with cerebral palsy, multiple sclerosis, and stroke on upper motor neuron syndrome symptoms — 49

Ouahiba Mohguen
Noise reduction and QRS detection in ECG signal using EEMD with modified sigmoid thresholding — 61

Merve Begum Terzi and Orhan Arikan
Machine learning based hybrid anomaly detection technique for automatic diagnosis of cardiovascular diseases using cardiac sympathetic nerve activity and electrocardiogram — 79