Innovation Center of Faculty of Mechanical Engineering

Faculty of Mechanical Engineering, University of Belgrade

Center for Business Trainings

CNN Tech

„International Conference of Experimental and Numerical Investigations and New Technologies"

Sponsored by:

MINISTRY OF EDUCATION, SCIENCE AND TECHNICAL DEVELOPMENT

OF THE REPUBLIC OF SERBIA

Programme

and

The Book of Abstracts

02-05 July 2019

Zlatibor, Serbia

„International Conference of Experimental and Numerical Investigations and New Technologies"

CNN TECH 2019

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Hotel Mona, Miladina Pecinara 26, Zlatibor, Serbia

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PREFACE

Dear Friends and Colleagues, Welcome to CNN Tech 2019 Conference and the fabulous mountain of Zlatibor!

With 65 papers (22 by international authors) and contributions by authors from 15 different countries, International Conference of Experimental and Numerical Investigations and New Technologies CNN Tech 2019 successfully sets the high level for the future conferences. Participation of a large number of domestic and international authors, as well as the diversity of topics, justifies our efforts to organize this conference and contribute to exchange of knowledge, research results and experience of industry experts, research institutions and faculties which all share a common interest in the field in experimental and numerical investigations.

This year CNN Tech 2019 focuses on the following topics:
- Mechanical Engineering,
- Materials Science,
- Chemical and Process Engineering,
- Experimental Techniques,
- Numerical Methods,
- New Technologies and
- Industry and sustainable development: contemporary management perspectives.

Apart from a plenty of interesting lectures, the participants will have a chance to lighten up and communicate in friendly and relaxed settings.

Organizing committee of CNN Tech 2019 would like to express gratitude to Ministry of Education, Science and Technological development for financial support of the Conference.

On behalf of the Innovation center of Faculty of Mechanical Engineering, Faculty of Mechanical Engineering and Center for Business Trainings, we wish this to be splendid CNN Tech conference filled with many memorable moments.

PROGRAMME AND ORGANIZING COMMITTEE

Invited lecture

PRODUCTION AND CHARACTERISATION OF NANOPHOTONIC SOFT CONTACT LENSES

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Abstract

Hydrogels have unique physical and chemical properties and therefore are used in a variety of biomedical applications, including drug delivery agents, prosthetic devices, the repair and replacement of soft tissues and contact lenses. Investigation of mechanical, physical and chemical properties of hydrogels is the first step in biomedical application. Poly (2-hydroxyethyl methacrylate) (pHEMA), as a biocompatible hydrogel, was first used hydrogel for making soft contact lens. Since then, many researches have been modified pHEMA with the aim of improving its properties. Application of nanotechnology could be one of the possible solutions for improving the characteristics of this biocompatible hydrogel. In this paper, poly (2-hydroxyethyl methacrylate) was used as standard material for soft contact lenses (SL 38). This material was incorporated with fullerene C_{60} (SL38-A), fullerol $C_{60}(OH)_{24}$ (SL 38-B) and fullerene metformin hydroxylate $C_{60}(OH)_{12}(OC_4N_5H_{10})_{12}$ (SL 38-C), respectively. Three new nanophotonic materials for soft contact lenses were obtained. The aim of this study was to develop appropriate process parameters for soft contact lens micro-turning. Also, studying the thermal decomposition of standard soft contact lens, pHEMA, as well as three new nanophotonic soft contact lenses was one of the main objectives. From the obtained results, it can be concluded that manufacturing process of nanofotonic soft contact lens is considered to be a micro-turning process regarding the cutting depth and tool nose ratio. Further, thermal properties of nanofotonic soft contact lenses were improved comparing to the standard soft contact lens.

Keywords

Nanophotonic soft contact lenses, fullerenes, hydrogel, production, thermal analysis

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