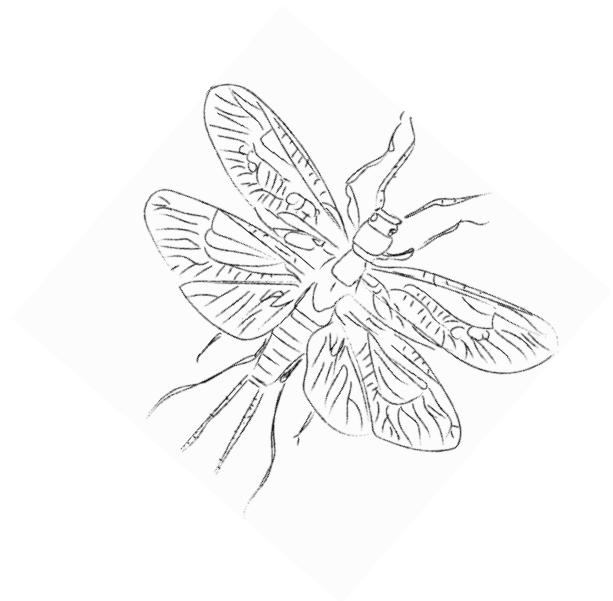




# ABSTRACT BOOK



## SEFS11 Abstract book

Editors: Mirela Sertić Perić, Marko Miliša, Romana Gračan, Marija Ivković, Ivana Buj, Vlatka Mičetić Stanković

Publisher: Croatian Association of Freshwater Ecologists, Rooseveltov trg 6, 10000 Zagreb, Croatia

### Editors' remarks

The authors alone are responsible for the abstract contents and views expressed in this publication. Thus, the content of abstracts expresses opinion of the respective authors and is fully under their responsibility. Scientific Committee members have been involved in the initial selection and review of the abstracts for presentation and publication. Editors have performed technical editing and final formatting of the abstracts. No substantial language editing of submitted abstracts was done. Reproduction and dissemination of material from this publication for educational or other non-commercial purposes are authorized without any prior written permission from the publisher, provided the source (citation) is fully acknowledged. Reproduction and usage of material for commercial purposes is prohibited without written permission of the publisher.

This publication should be cited as follows: Sertić Perić, M; Miliša, M; Gračan, R; Ivković, M; Buj, I; Mičetić Stanković, V (editors). 2019. SEFS11 Abstract book. Croatian Association of Freshwater Ecologists, Zagreb, Croatia. pp. 504

Publication is available at:



**ORGANIZERS:**

[Croatian association of freshwater ecologists](#) (CAFE)

(HUSEk – Hrvatsko udruženje slatkovodnih ekologa)

Chair: Marko Miliša

Tel: +385 1 4877715

Co-chair: Mirela Sertić Perić

Tel: +385 1 4877725

E-mail: [infosefs11@biol.pmf.hr](mailto:infosefs11@biol.pmf.hr)



a member of [European Federation for Freshwater Sciences](#)

**PROFESSIONAL CONGRESS ORGANIZER (PCO):**

PBZ Card Ltd., Travel agency

Address: Radnička cesta 44, 10000 Zagreb, Croatia

Tel. : +385(0)1 6124 222

Fax.: +385(0)1 6363 099

Contact: Mirela Gašpar

E-mail: [travel@pbzcard.hr](mailto:travel@pbzcard.hr)

[www.pbzcard-travel.hr](http://www.pbzcard-travel.hr)

IDK: HR-AB-01-080258649

OIB: 28495895537



\*Waves design inspired by Freepik\*



## RS5\_O20\_Evaluation of Cerium-oxide (CeO<sub>2</sub>) nanoparticle toxicity to freshwater midge *Chironomus riparius* (Diptera, Chironomidae) – potential biomarkers

Author(s): Dimitrija SAVIĆ-ZDRAVKOVIĆ<sup>1\*</sup>; Djuradj MILOŠEVIĆ<sup>1</sup>; Jelena STANKOVIĆ<sup>1</sup>; Aca ĐURĐEVIĆ<sup>1</sup>; Hatice DURAN<sup>2</sup>; Ezgi ULUER<sup>2</sup>; Sanja MATIĆ<sup>3</sup>; Snežana STANIĆ<sup>3</sup>; Janja VIDMAR<sup>4</sup>; Katarina MARKOVIĆ<sup>4</sup>; Janez ŠČANČAR<sup>4</sup>; Domagoj ĐIKIĆ<sup>5</sup>; Marko MILIŠA<sup>5</sup>; Boris JOVANOVIĆ<sup>6</sup>

<sup>1</sup>Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, Serbia; <sup>2</sup>Department of Materials Science and Nanotechnology Engineering TOBB University of Economics and Technology, Ankara, Turkey; <sup>3</sup>Department of Biology and Ecology, Faculty of Science, University of Kragujevac, Serbia; Department of Environmental Sciences,<sup>4</sup>Jozef Stefan Institute, Ljubljana, Slovenia; <sup>5</sup>Faculty of Science, Department of Animal Physiology, Zagreb, Croatia; Faculty of Science, Department of Biology, Rooseveltov trg 6, Croatia; <sup>6</sup>Department of Natural Resource Management and Ecology, Iowa State University, Ames, IA, USA

Presenting author\*: [dimitrija.savic@pmf.edu.rs](mailto:dimitrija.savic@pmf.edu.rs)

The toxicity of Cerium-oxide nanoparticles (nano-CeO<sub>2</sub>) on the freshwater midge *Chironomus riparius*, Meigen, 1804 was assessed by observing several biomarkers, from molecular to the ecological level. Experiments were designed using measured concentrations of nano-CeO<sub>2</sub> in the sediment, according to the OECD guidelines for testing of chemicals, in the laboratory setup. The full characterization of the CeO<sub>2</sub> nanoparticles was made and the concentrations of 2.5, 25, 250 and 2500 mg of nano-CeO<sub>2</sub> per kg of sediment were tested. Following parameters were investigated: nano-CeO<sub>2</sub> intake by the larvae, oxidative stress parameters, in vivo genotoxic effect, geometric morphometry changes and life trait parameters (developmental time, emergence, mortality and survival rate). The Spearman rho test showed that the increase of nano-CeO<sub>2</sub> content in the chironomid larvae was highly correlated (rho=0.73, p<0.01) with the increase of nano-CeO<sub>2</sub> in the sediments. At the lower biological level, toxicity was detected through significant (p < 0.05) DNA damage in the midges exposed to higher nano-CeO<sub>2</sub> levels (tested by one-way ANOVA). The toxicity was not detected at the developmental level, causing no observable effects on life traits. In addition, investigated oxidative stress parameters showed no significant differences between the treatments. There is a need for further investigation in order to understand causal relationships between molecular and higher-level responses to nano-CeO<sub>2</sub> exposure. Nevertheless, obtained results indicate that *C. riparius* could be used as bioindicator, providing valuable information for nano-CeO<sub>2</sub> risk assessment in freshwaters.

