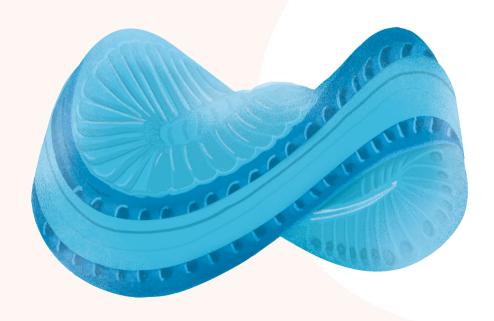


Ohrid, North Macedonia



## **BOOK OF ABSTRACTS**

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### **BOOK OF ABSTRACTS**

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#### **PREFACE**

fter three years planning and postponing, European Diatom Ameeting is organized in Ohrid, North Macedonia. Initially planned for 2021, then postponed for 2022 due to the Covid 19 pandemic, it was finally scheduled for 2024. Having in mind the exceptional biological features of the Lake Ohrid, which were recognized by UNESCO in 1979, as well the cultural tradition and importance of town of Ohrid, it was not preferred to organize an online meeting during pandemics and restrictions. The conference is a great opportunity for participants to experience our famous lake that was already visited by several famous algologists such as Bruno Schröder, Bohuslav Fott, Friedrich Hustedt, Anto Jurili, Horst Lange-Bertalot, Ditmar Metzeltin etc. One of the most famous excursions was organized by Dr. Siniša Stanković in 1934 during the 7th Congress of Limnologists in Belgrade, Serbia, when the most prominent limnologists of the time visited for the first time Lake Ohrid and subsequently published numerous studies highlighting the lake as an important biological and geological site.

This year EDM is organized on the shore of Lake Ohrid, one of the biodiversity hotspots in Europe. The lake is considered to have the highest index of endemic diversity of animal species, with 80% of endemism in some animal groups such as Porifera, Tricladida, Amphipoda, Gastropoda etc. Such high diversity and endemism, is most likely the result of multiply colonization and intralacustrine speciation in combination with longevity of the lake without catastrophic events during its geological history. The lake existed continuously at least 2 million years, although some geological studies and biological data suggest much older lake spanning from the late Miocene.

The commission of UNESCO also recognized the importance of the town of Ohrid as cultural, architectural and religious centre. The town of Ohrid is one of the oldest human settlements in Europe. As one of the best preserved complete ensembles encompassing archaeological remains from the Neolithic Era up to the Middle Ages. Ohrid is a testimony of Byzantine arts, displayed by more than 2,500 square metres of frescoes and more than 800 icons of worldwide fame. The churches of St. Sophia (11th century), Holy Mother of God Perivleptos and St.

John Kaneo notably display a high level of artistic achievements in their frescoes and theological representations. The Lake Ohrid region boasts the most ancient Slavic monastery and the first Slavic University in the Balkans – the Ohrid literary school that spread writing, education and culture throughout the old Slavonic world.

The EDM conference is a continuation of the Central European Diatom Meeting (CEDM) and the Treffen Deutschsprachiger Diatomologen (DDT), which has been held regularly for almost 50 years. Almost 140 participants from 29 countries attend the 15th EDM conference, not only from Europe, but also from Africa, Asia and North America. A total of 116 scientific studies will be presented at the conference, including three keynote speeches, 41 oral presentations and 72 posters, covering various topics of diatom research: taxonomy, phylogeny, evolution, genetic, ecology, paleoecology, physiology, forensic, 3D printing and materials that makes the 15th EDM one of the largest EDM conferences. The EDM will be followed by a one-day Workshop on diatom taxonomy "European species of the araphid genera *Staurosira* and *Staurosirella*" organised by Bart Van de Vijver.

On behalf of the conference committee, we would like to welcome all participants to our EDM conference in Ohrid and wish them a successful conference with constructive discussions accompanied by traditional Macedonian food, beer and wine. We would like to take this opportunity to thank the keynote speakers, presenters and authors for contribution, and wish you all a fulfilling experience and very pleasant stay in Macedonia.

Danijela Mitic Kopanja, Dušica Zaova & Zlatko Levkov

# ORAL PRESENTATIONS

#### 3D PRINTING OF DIATOMS

<u>Ille C. Gebeshuber</u>1\*, Richard W. van Nieuwenhoven<sup>1</sup>, Thomas Petz<sup>1</sup> & Markus Grammer<sup>2</sup>

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The group of Ille C. Gebeshuber, physics professor at TU Wien in Austria, has more than a quarter of a century experience in diatom research and outreach. In the last millennium, they investigated live diatoms with atomic force microscopy in Santa Barbara, California, USA. Then they concentrated on diatom tribology and especially hinges and interlocking devices in diatoms, as biomimetic inspiration for 3D MEMS (minute components in electronics). This work was mainly done in South East Asia. Subsequently, listening to diatoms with hydrophones and the establishment of structure-function relationships (especially in Corethron criophilum) was the focus of their research at TU Wien. Nowadays the group concentrates on the development of scalable designs for 3D printing of diatoms, for use in science, outreach and art. Investigating mechanical properties of diatoms can be tedious due to their minute size. 3D printed models on a larger length scale increase the accessibility and promote understanding of complex functionalities. For biologists, digital repositories such as Thingiverse are of specific interest because of the possibility to provide and download 3D models of complex biological structures and custom laboratory equipment. Such platforms democratize access to customizable designs, fostering innovation in experimental methodologies and the development of specialized tools tailored to specific research needs in the biological sciences. By leveraging this repository, biologists can significantly accelerate the iterative process of design and testing, thereby enhancing the efficiency and precision of scientific inquiry and experimentation. In the course of the last years, our group developed designs of the diatoms Ellerbeckia arenaria, Kittonia elaborata and Hyalodiscopsis plana. These designs can be downloaded from https://www.thingiverse. com/calopteryx92/collections/41458463/things.

The presentation will support scientists in creating 3D models of their specific diatoms of interest on their own, by providing established protocols, and widens the pool of available designs for diatoms that can be utilized in science, art and outreach.

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