



SERBIATRIB '23

18th International Conference on Tribology

17 – 19 May 2023, Kragujevac, Serbia

PROCEEDINGS



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Serbian Tribology Society



University of Kragujevac
Faculty of Engineering

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EDITOR: Slobodan Mitrović



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ISBN: 978-86-6335-103-5

- Editor:** **Slobodan Mitrović**
Faculty of Engineering, University of Kragujevac
- Publisher:** **Faculty of Engineering, University of Kragujevac**
Sestre Janjić 6, 34000 Kragujevac, Serbia
- For the Publisher:** **Slobodan Savić**
Faculty of Engineering, University of Kragujevac
- Technical editor:** **Dragan Džunić**
Faculty of Engineering, University of Kragujevac
- Printed by:** **Inter Print**
Jurija Gagarina 12, 34000 Kragujevac, Serbia
- Circulation:** 200 copies

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The publication of this Proceedings was financially supported by the Ministry of Science, Technological Development and Innovation, Republic of Serbia.

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Preface

The International Conference on Tribology – SERBIATRIB, is traditionally organized by the Serbian Tribology Society every two years, since 1989. The previous conferences were held in Kragujevac (1989, 1991, 1993, 1999, 2005, 2007, 2011, 2013, 2017, and 2019), Herceg Novi (1995), Kopaonik (1997), Belgrade (2001, 2003, 2009, 2015 and 2021). This year the 18th International Conference on Tribology – SERBIATRIB '23 also takes place on May 17-19, 2023 in Kragujevac.

This Conference is organized by the University of Kragujevac, Faculty of Engineering and the Serbian Tribology Society (STS). Organizing Scientific Conferences, STS plays a significant role in helping engineers and researchers to introduce in the fundamentals of tribology and to present their experience, solutions and research results.

The scope of the 18th International Conference on Tribology – SERBIATRIB '23 embraces the state of art and future trends in tribology research and application. The following two aspects of tribology practice require special attention. Firstly, the requirement for higher productivity of machinery means that machines must operate under higher loads and at higher speeds and temperatures, and that is why finding the right solutions for tribological processes is extremely important. Secondly, a good tribology knowledge can greatly contribute to the saving of material and energy.

The Conference program generally includes the following topics: fundamentals of friction and wear; tribological properties of solid materials; surface engineering and coating tribology; lubricants and lubrication; tribotesting and tribosystem monitoring; tribology in machine elements; tribology in manufacturing processes; tribology in transportation engineering; design and calculation of tribocontacts; sealing tribology; biotribology; nano and microtribology and other topics related to tribology.

All together 100 papers of authors from 30 countries (Algeria, Australia, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, China, Croatia, France, Germany, Greece, Hungary, India, Iran, Iraq, Italy, Japan, Kuwait, Malaysia, Montenegro, Nigeria, Poland, Romania, Russia, Serbia, Slovenia, Switzerland, Turkey, Ukraine, United Kingdom) are published in the Proceedings.

All papers are classified into nine chapters:

- Plenary lectures (5)
- Fundamentals of friction and wear (11)
- Tribological properties of solid materials (15)
- Surface engineering and coating tribology (13)
- Lubricants and lubrication (10)
- Tribology in machine elements (7)
- Tribology in manufacturing processes (11)
- Tribology in transportation engineering (5)
- Design and calculation of tribocontacts (3)
- Biotribology (5)
- Other topics related to tribology (15)

It was a great pleasure for us to organize this Conference and we hope that the Conference, bringing together specialists, research scientists and industrial technologists, and Proceedings will stimulate new ideas and concepts, promoting further advances in the field of tribology. I would like to thank the Scientific and the Organizing Committee and all those who have helped in making the Conference better.

The Conference is financially supported by the Ministry of Science, Technological Development and Innovation, Republic of Serbia, TRC PRO, Rtec Instruments, Ansar-analitika Instrumenti, Lotrič Metrology and Coatings.

We wish to all participants a pleasant stay in Kragujevac and we are looking forward to seeing you all together at the 19th International Conference on Tribology – SERBIATRIB '25.

Kragujevac, May 2023



Editor
Slobodan Mitrović

A handwritten signature in blue ink, appearing to read "S. Mitrović".

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