



Serbian Tribology Society



Faculty of Engineering  
University of Kragujevac

# SERBIATRIB '17

**15<sup>th</sup> International Conference on Tribology**

17 – 19 May 2017, Kragujevac, Serbia

# PROCEEDINGS





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EDITOR: Slobodan Mitrović



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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 and 2013), Herceg Novi (1995), Kopaonik (1997), Belgrade (2001, 2003, 2009 and 2015). This year the 15<sup>th</sup> International Conference on Tribology – SERBIATRIB '17 also takes place on May 17-19, 2017 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 15<sup>th</sup> International Conference on Tribology – SERBIATRIB '17 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, the 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 96 papers of authors from 23 countries (Australia, Bangladesh, Belarus, Bosnia and Herzegovina, Bulgaria, China, Croatia, Czech Republic, Greece, India, Iraq, Italy, Mexico, Nigeria, Romania, Russia, Serbia, Slovakia, South Korea, Taiwan, Turkey, Ukraine and USA) are published in the Proceedings. Approximately 59 papers were submitted by the foreign authors and app. 37 papers by the Serbian authors.

All papers are classified into nine chapters:

- Plenary lectures (4)
- Tribology of Solid Materials (19)
- Surface Engineering and Coating Tribology (9)
- Tribology of Machine Elements (15)
- Tribology of Manufacturing Processes (11)
- Lubricants and Lubrication (12)
- Tribometry (15)
- Biotribology (8)
- Trenje, habanje i podmazivanje (3) – papers written in Serbian language

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. The Editor 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 Education, Science and Technological Development, Republic of Serbia.

This Conference is dedicated to the late Professor Branko Ivković, who is the founder of the Tribology Society in our Balkan region and established our SERBIATRIB Conference from its beginning, previously YUTRIB. We hope we will be able to continue his great work in this area.

We wish to all participants a pleasant stay in Kragujevac and we are looking forward to seeing you all together at the 16<sup>th</sup> International Conference on Tribology – SERBIATRIB '19.

Kragujevac, May 2017

Editor  
Prof. Dr Slobodan Mitrović