



**21 YEARS OF BALKAN  
TRIBOLOGICAL ASSOCIATION**



**ROMANIAN TRIBOLOGY  
ASSOCIATION**



**UNIVERSITY PETROLEUM-GAS OF  
PLOIESTI, ROMANIA**

**BALKANTRIB'14**

**8<sup>th</sup> INTERNATIONAL CONFERENCE ON TRIBOLOGY, 30<sup>th</sup> Oct.-1<sup>st</sup> Nov. 2014, SINAIA, ROMANIA**

**40 Years Tribology in Bulgaria**

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**Dear participants in the 8<sup>th</sup> International Conference BALKANTRIB 2014,  
Dear colleagues tribologists of the Balkan Tribological Association,**

Let us bring to you and to the organizers of the conference the greetings of the members of the Society of Bulgarian Tribologists in the occasion of this significant event! We have to highlight two jubilees in this year: the full age of 21 years of the establishment of the Balkan Tribological Association and 40 years of the birth of the Bulgarian Tribology.

The 1960s and 1970s were a symbol of the transition to a new phase of the global progress. These periods are also connected with the accentuation of the interdisciplinary attitude to the regional and global problems of humanity. It is no accident that tribology was born in 1966 as interdisciplinary science. Later in those years, tribology centers, laboratories and business groups appeared in many countries.

Tribology was institutionalized in Bulgaria in the form of Laboratory of Tribology. It was established at the Technical University – Sofia in 1974 on the initiative of Prof. Nyagol Manolov. Later the Laboratory grew into National Coordination Center on Tribology unifying the activities of research and educational groups in Sofia, Plovdiv, Rousse, Gabrovo, etc. in that domain. Based on these organizations in 1993 was founded the NGO Society of Bulgarian Tribologists”. The same year, in September 1993, in Sofia was established the Balkan Tribological Association with member-countries Bulgaria, Greece, FYROM, Romania, Serbia and Turkey.

The tribological activities in Bulgaria are coordinated by the Managing Committee of the Society of Bulgarian Tribologists and the Tribology Center at the Technical University - Sofia. The annual international conference BULTRIB and the website [www.bultrib.com](http://www.bultrib.com) are organized by the Society of Bulgarian Tribologists.

The Society of Bulgarian Tribologists is related to the governmental institutions based on the “Conception of the development of tribology in Bulgaria” accepted and approved by the State Committee for science and technical progress and the Ministry of education in 1987. In 2005 N. Manolov, E. Assenova and M. Kandeveva updated the Conception in the name of the Tribology Center - Sofia.

Following the Conception, technological, R&D and manufacturing laboratories and groups in the field of tribology were established at various universities and institutes of the Bulgarian Academy of Sciences in Sofia, Plovdiv, Varna, Burgas, Russe, Gabrovo, etc. In 2000 was founded the Interdisciplinary Civil Academy in Sofia under the chair of Prof. DSc Nyagol Manolov.

Main achievements in the development of the Society of Bulgarian Tribologists and the Tribology Center at the Technical University - Sofia are:

**1. Activities in the area of education and publishing**

- Legitimate tribology in the nomenclature of sciences in Bulgaria;
- Training of lecturers and scientific specialists in tribology – doctors, professors, experts;
- Preparation and launching of syllabuses and programs for Bachelors and Masters in tribology at the Faculty of industrial Engineering of the Technical University - Sofia: Dynamics and tribology of machines, Tribology and lubricants, Engineering tribology and Micromechanics and nanotribology;
- Publishing of tribological journals: Journal of the Balkan Tribological Association, Tribological Journal Bultrib, Contacts;
- Publishing of textbooks, manuals, and handbooks in tribology and mechanics: Overall tribology; Mechanics in interdisciplinary style; Practical manual in tribomechanics;
- Publishing of monographs: The theory of contact (N. Manolov), The contact approach (N. Manolov), Tribology and interdisciplinarity (N. Manolov), The contact approach in engineering tribology (M. Kandeveva), The interdisciplinary paradigm of tribology (N. Manolov, M. Kandeveva);
- National project “Improving the higher engineering education based on the interdisciplinary approach”;
- International project in the first tribological network CEEPUS III: CIII-BG-0703 “Modern Trends in Education and Research on Mechanical Systems - Bridging Reliability, Quality and Tribology”.
- Working out and maintenance of the national tribological website [www.bultrib.com](http://www.bultrib.com)

**2. Activities in the theory and methodology of tribology:**

- The interdisciplinary paradigm of tribology;
- The theory of contact;
- The contact approach in engineering tribology;
- The method of contact conductance in tribology;
- The method of contact deformation and contact displacement;
- Modeling of friction in machine-tools;
- Self-organization in tribosystems ;
- Modeling of elastohydrodynamic friction;
- The effect of non-permeability of contact gaps.

**3. Engineering and technological activities and projects:**

- Tribotechnology and technique of regeneration of automotive air filters TREFA implemented in the city of Jezkazgan in Kazakhstan;
- Methods of regeneration and wear-resistance improvement of calender shafts for foil, packaging films, etc.;
- Tribotechnology for manufacturing of pneumatic valves;
- Testing and qualifying of tribological materials and composite nano- and microstructured coatings in the area of friction, wear and lubrication;
- Tribological and physic-chemical characteristics of the metal-plating additive Valena and the effect of no-wear friction.

A special place in the achievements is the development of the General Law of contact interaction in tribology, which unifies tribological phenomena and processes introducing the integrated factor “communication (contact) potential”. The law is implemented in other scientific domains, like demography, ecology, engineering pedagogies, etc.

In conclusion, we would like to bring to the attention of the Conference BALKANTRIB 2014 in the name of the Managing Committee of the Society of Bulgarian Tribologists the following three **Proposals**:

1. An international Master specialty “Triboengineering” to be organized and launched during the future Romanian mandate of the Balkan Tribological Association with the participation of all member-countries. The proposal was discussed and adopted at the International conference BULTRIB 2012 in Sofia.
2. Regional project of the Balkan Tribological Association to be developed in the problems of Green Tribology under the title e.g. “Tribotechnological solutions aiming reduction of friction and wear and environmental protection”. The proposal was discussed in meetings in Sofia and Bucharest with the colleagues Assoc. Prof. Dr. A. Radulescu, Prof. Dr. A. Tudor, PhD. Eng. P. Drumea, PhD. Eng. C. Cristescu, Ph D. Eng. C. Dumitrescu, Assoc. Prof. Dr. I. Radulescu.
3. Awarding the founder Prof. DSc Nyagol Manolov as Honorary Chairman of the Balkan Tribological Association, in connection with the anniversaries of the Tribology in Bulgaria and of the Balkan Tribological Association.

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