

Tribology Group in 2019

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ÚSTAV
KONSTRUOVÁNÍ

TRIBOLOGY GROUP



TRIBOLOGY GROUP IN 2019

PROJECTS

Fundamental research

- *Czech Science Foundation – 3 projects*
- *Ministry of Education – 3 projects (Czech – USA, Czech – China)*
- *EU – 1 project (H2020 RISEN Rail Infrastructure Systems Engineering Network)*

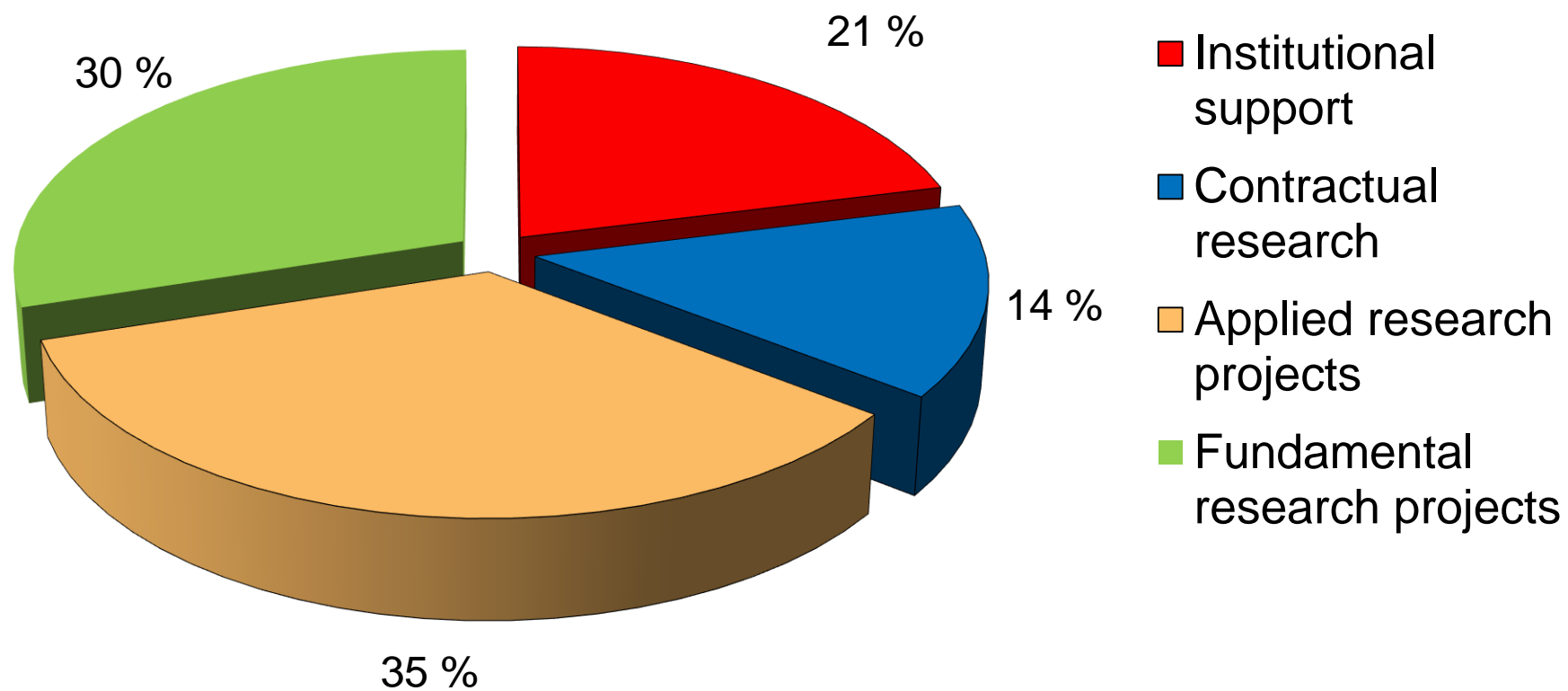
Applied research

- *Technology Agency of the Czech Republic – 5 projects*
- *Ministry of Industry and Trade – 2 projects*

Contractual research

Institutional support

PROJECTS



PUBLICATIONS – 10 WoS/5 Scopus

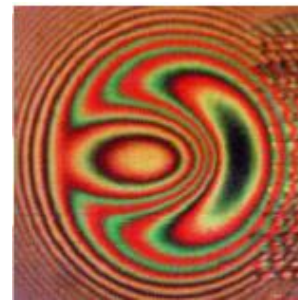
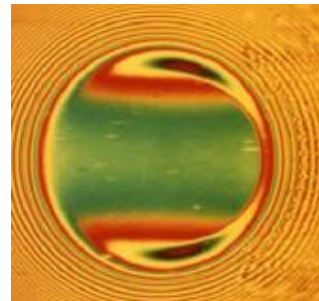
- *Tribology Letters* – 1 papers – Q2
- *Journal of the Mechanical Behavior of Biomedical Materials* – 2 papers – Q1
- *Lubrication Science* – 1 paper Q3
- *Friction* – 2 papers Q1
- *Wear* – 1 paper Q1
- *Journal of Environmental Protection and Ecology* – 2 papers Q4
- *Journal of Analytical Atomic Spectrometry* – 1 paper Q1
- *Lubricants* – 2 papers
- *Biotribology* – 1 paper
- *Tribology in Industry* – 2 papers

Applied research

- Research and Development of Lubrication System with Proactive Control (Trio) – Tribotec
- A predictive system for catenary lines protection against extreme climatic conditions (Epsilon) – Tribotec
- Development of wayside unit for railway noise mitigation (Zéta)
- Rotary Actuator for Space Applications (Epsilon) – Honeywell, Frentech
- National Competence Centre of Mechatronics and Smart Technologies for Mechanical Engineering (NCC) – Daido Metal, Bosch
- Josef Bozek National Competence Center for Surface Vehicles (NCC) – Tribotec

Fundamental research

- Effect of thermal properties of contacting bodies on lubricant flow in Hertzian non-smooth contacts (CSF)
- Nonlinear dynamics of rotating systems considering fluid film instabilities with the emphasis on local effects (CSF) – WBU
- Thermo-Elastohydrodynamics of Coated Polymer Gears (CSF) – TUM
- The effect of tribological processes on the durability of knee joint replacements (MEYS) – Rush University
- Study on key technologies and application strategies for wheel-rail friction management in rail transport (MEYS) – Southwest Jiaotong University



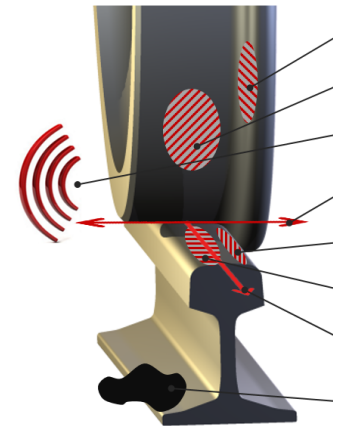
Fluid supply parameters
(p ; Q ; T)

Fluid rheology
(μ ; τ_{lim})

Speed (n)

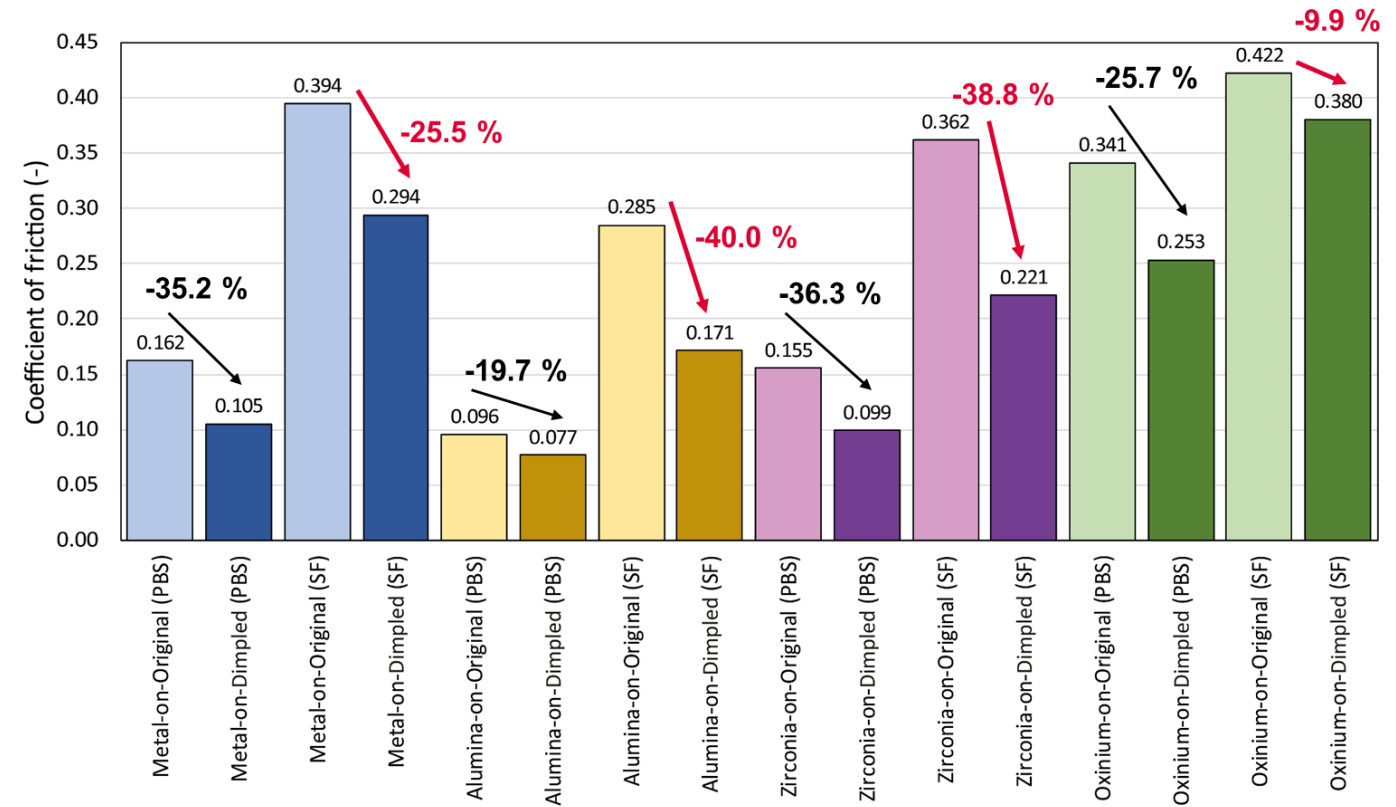
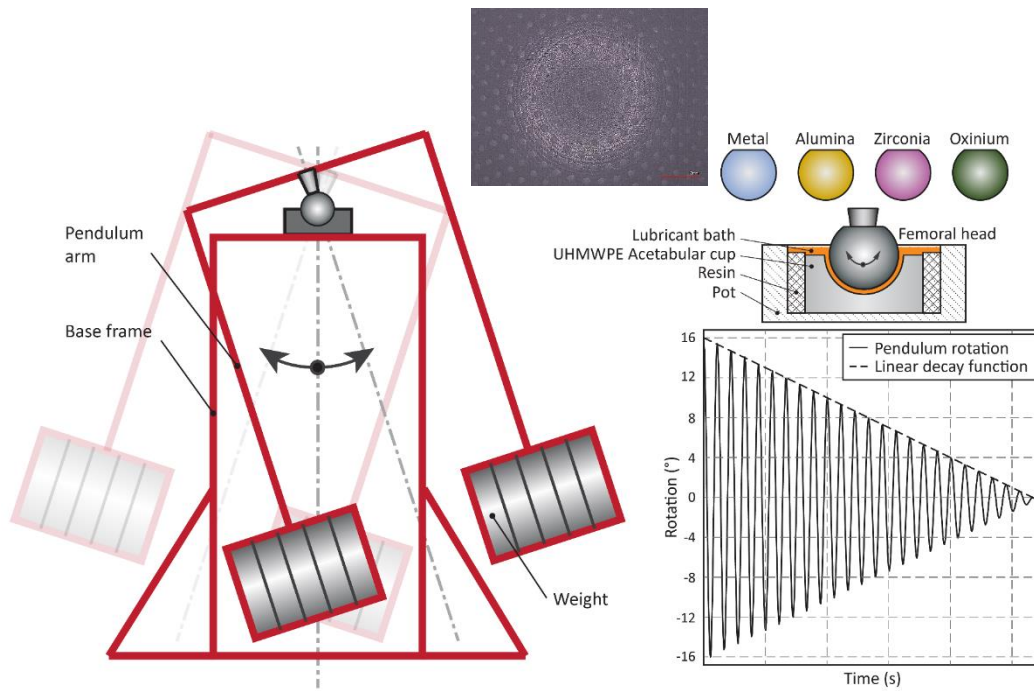
Loading (W ; f)

Geometry (δ ; Ra)



Fundamental research

- Cooperation with Meijo University & Kyushu University, Japan
- Unique texturing of UHMWPE hip cups
- Clear impact on friction coefficient
- Paper accepted – Friction (IF 3.0, Q1)



3rd Czech-Japan Tribology Workshop



Vinice Hnanice, October 27 – 30, 2019

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