

CRC 926 „Microscale Morphology of Component Surfaces (MICOS)“

Surfaces have a significant influence of component function and lifetime. In an interdisciplinary cooperation between mechanical engineering, process engineering as well as surface physics CRC 926 investigates the scientific fundamentals of the creation, characterization and application of component surfaces with specific functionality. The research activities are focussed on processes and methods on the microscale. The morphology of component surfaces is defined by its geometrical shape (topography) as well as its physical and chemical properties.

Project Leaders

Prof. Dr.-Ing. Sergiy Antonyuk
Prof. Dr.-Ing. Jan C. Aurich
Prof. Dr.-Ing. Tilmann Beck
Prof. Dr. rer. nat. Georg v. Freymann
Prof. Dr.-Ing. Hans Hasse
Prof. Dr.-Ing. Eberhard Kerscher
PD Dr.-Ing. habil. Benjamin Kirsch
Prof. Dr. rer. nat. Michael Kopnarski
Prof. Dr.-Ing. Ralf Müller
Prof. Dr.-Ing. Kristin de Payrebrune
Prof. Dr.-Ing. Bernd Sauer
JP Dr.-Ing. Clarissa Schönecker
Prof. Dr.-Ing. Jörg Seewig
Dr.-Ing. Marek Smaga
Prof. Dr. rer. nat. Roland Ulber
Prof. Dr. rer. nat. Herbert M. Urbassek

Registration

Please register until February 19th, 2023 with informal E-Mail to ilona.stein@rptu.de
We will then provide you with more information. Participation in the conference is free.

Contact

CRC 926
Speaker: Prof. Dr.-Ing. Hans Hasse
Office: Ilona Stein
RPTU Kaiserslautern
Laboratory of Engineering Thermodynamics
Erwin-Schrödinger-Str., Building 44, Room 414
67663 Kaiserslautern
Germany
Tel.: +49 (0)631 205-5401
E-Mail: ilona.stein@rptu.de
www.sfb926.de

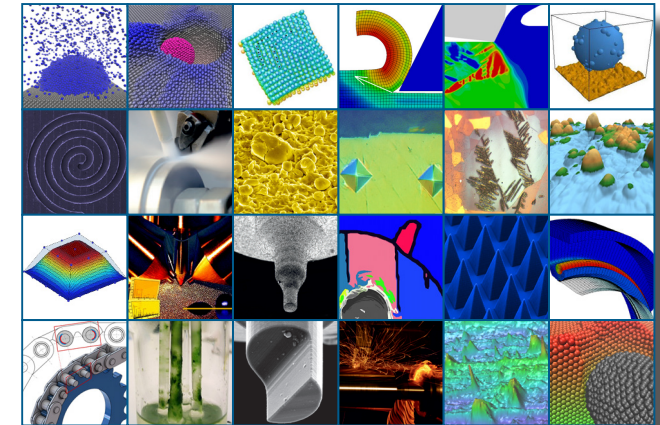
Venue

The meeting will take place at Kurpark-Hotel Bad Dürkheim
Schlossplatz 1
67098 Bad Dürkheim
Germany
<https://www.kurpark-hotel.de>

RPTU

International Conference on Microscale Morphology of Component Surfaces MICOS 2023

March 6-8th, 2023
Bad Dürkheim, Germany



Monday, March 6th, 2023

13:30 H. Hasse, RPTU Kaiserslautern
Welcome

Session I: Component surfaces and properties

13:40-14:30 V. Schulze, KIT Karlsruhe
Properties-oriented surface conditioning in cutting processes

14:30-15:20 E. Kerscher, RPTU Kaiserslautern
Interrelationship of manufacturing, surface morphology, and properties of Titanium

15:20-15:50 Coffee break

Session II: Influence of surface morphology on the fatigue, wear and corrosion of metallic materials

15:50-16:40 M. Smaga, RPTU Kaiserslautern
Influence of surface morphology on the fatigue and wear behavior of austenite

16:40-17:30 J. Krzak, Wroclaw University
Influence of SiO₂ layers on the corrosion, wear and fatigue of steels. Development of the sol-gel protective coatings

17:30-19:00 Postersession & Apéro

19:30 Dinner

Tuesday, March 7th, 2023

Session III: Creating surface morphologies by material removal processes

08:30-09:10 J. C. Aurich & B. Kirsch, RPTU Kaiserslautern
Creating surface morphologies by cryogenic machining

09:10-09:50 E. J. da Silva, University of São Paulo
Cryogenic grinding of hardened components: the impact on the surface morphology

09:50-10:30 F. J. P. Sousa, University of Rio Grande do Norte
Computational simulation of the polishing process of floor tiles using physical and data-driven models

10:30-11:00 Coffee break

Session IV: Influence of surface morphology on the functionality of machine elements

11:00-11:50 S. Thielen & M. Oehler, RPTU Kaiserslautern
Influence of surface morphology on the function of shaft seals, chain joints and roller bearings

11:50-12:40 V. Aul, ZF Friedrichshafen
Applications and manufacturing possibilities of industrially finished bearing surfaces

12:40-14:00 Lunch

Session V: Calibration of optical topography measuring instruments

14:00-14:50 S. Gao, PTB Braunschweig
Traceable industrial 3D roughness and dimensional measurement using optical microscopy and distance sensors - EU project TracOptic

14:50-15:40 G. v. Freymann & J. Hering-Stratemeier, RPTU Kaiserslautern
Designing and fabricating calibration artifacts

15:40-16:10 Coffee break

Session VI: Interaction of life with surfaces

16:10-17:00 J. Gescher, Hamburg University of Technology
Understanding, engineering and applying microbes on cathodes and anodes. Two stories from isolated species

17:00-17:50 R. Ulber & C. Müller-Renno, RPTU Kaiserslautern
Productive biofilms on structured surfaces

19:00 Conference dinner

Wednesday, March 8th, 2023

Session VII: Fluids at component surfaces

08:30-09:20 C. Bringedal, Western Norway University of Applied Sciences
Phase-field models for evaporation with fluid-solid interaction

09:20-10:10 H. Hasse & R. Müller, RPTU Kaiserslautern & TU Darmstadt
Multiscale modeling and simulation of wetting of component surfaces

10:10-10:40 Coffee break

Session VIII: Interactions between particles and surfaces

10:40-11:20 R. Aghababaei, Aarhus University
Micromechanics of three-body wear at the contact between metals and polymers

11:20-12:00 A. Di Renzo, University of Calabria
Modelling surface-surface tribocharging processes in Discrete Element Method simulations of particulate materials

12:00-12:20 K. de Payrebrune, RPTU Kaiserslautern
Dynamical aspects of particles in a tribotechnical system

12:20-12:40 C. Schönecker, RPTU Kaiserslautern
Elastohydrodynamic particle-surface interactions during sedimentation

12:40-12:50 Concluding remarks

12:50 Quicklunch / departure