

Wednesday, November 5, 2025

Short courses

Nanoindentation / Scratch / Tribology

08:00 Registration and welcome

08:30 Introduction

*Theoretical introduction to Nanoindentation /
Scratch / Tribology*

09:00 Hands-on part 1

10:30 – 10:50 Coffee break

10:50 Hands-on part 2

12:00 – 13:00 Lunch break at Sudhaus

MSC Seminar

12:30 Registration and welcome

13:15 Opening remarks

*Phillip Tomé
General Manager - Anton Paar TriTec SA (CH)*

Session chaired by Jiri Nohava, PhD

13:30 Invited speaker

**Several applications of nanoindentation
in the study of materials: from local
mechanical properties in metallic
nanocomposites to small-scale
plasticity mechanisms in MAX phases**

*Prof. Christophe Tomas
University of Poitiers (FR)*

14:15 Near-atomic scale solute cluster–
dislocation interactions revealed by
micropillar compression in Al-Zn-Mg-Cu
alloys

*Prof. Hyokyung Sung
Kookmin University (KR)*

14:30 Micro- and nano-mechanical properties
and high-temperature wear behaviour of
High-Entropy Hardmetal coatings
deposited by HVOF

*Dr. Lorenzo Miconi
University of Modena and Reggio Emilia (IT)*

14:45 – 15:15 Coffee break

Session chaired by Dr. Megan J. Cordill

15:15 Micro-indentation assessment of the
Impact of temperature and relative
humidity conditions on cement paste
visco-elastic properties

*Camille Martin -- Cavaillé
Université de Toulouse (FR)*

15:30 Comparable hardness measurement of
thin coatings using nanoindentation –
Opportunities and hurdles

*Michael Brandmair
Tenneco (DE)*

15:45 Advanced surface characterization of
Li-ion battery components

*Dr. Petra Christöfl
Polymer Competence Center Leoben (AT)*

16:00 Traceable measurement of nano-
coating thickness by nanoindentation

*Dr. Giacomo Maculotti,
Politecnico di Torino (IT)*

16:15 Mechanical characterization and
parametric optimization of LWIR hard
coatings

*Alper Haliloglu
Aselsan (TR)*

16:30 Evaluating thin film coatings through
combined X-ray reflectometry and
thermo-mechanical testing

*Dr. Bernhard Völker
Anton Paar (AT)*

16:45 Closing remarks

*Jakob Santner
CEO/CTO Anton Paar (AT)*

17:00 Company tour

18:00 Welcome drink at Sudhaus

Thursday, November 6, 2025

08:30 Registration and welcome

Session chaired by Mohammad Arab Pour Yazdi, PhD

09:00 Invited speaker

Deposition and characterization of MoN-based coatings for tribological applications

*Astrid Gies
Oerlikon Surface Solutions AG (LI)*

09:45 Impact and wear resistance of HVOF-sprayed WC–Cr₃C₂–metal matrix coatings

*Šárka Houdková, PhD
Research & Testing Institute Plzeň (CZ)*

10:00 Tribological performance of friction reducing composite coatings on engineering thermoplastics by thermal plasma spraying

*DI Dr. Dietmar Kopp
Joanneum Research (AT)*

10:15 Comparison of the tribological behavior of Stellite 6 and Stellite 21 coatings deposited by HVOF and cold spray technologies

*Martin Berka
Research and testing institute Plzeň (CZ)*

10:30 – 11:00 Coffee break

Session chaired by Astrid Gies

11:00 Scratching the surface of digital twins: Process – property relationships in titanium-based arc PVD coatings for medical applications

*Henry Dempwolf
DOT GmbH (DE)*

11:15 Novel approach for scratch analysis of ductile metallic layers on fragile substrates

*Mohammad Arab Pour Yazdi, PhD
Anton Paar TriTec SA (CH)*

11:30 Scratch tests analysis in thin films under varying thickness conditions

*Zineb Lakhlioui
University of Lille (FR)*

11:45 Surface resistance of epoxy/PVB composite coatings modified with graphite and tungsten disulfide nanoparticles

*Dr. Danica Bajić
Military Technical Institute (RS)*

12:00 Effect of surface treatment on the wear resistance of AISI 304 stainless steel

*Andrij Krasij
Research and testing institute Plzeň (CZ)*

12:15 Announcements / Official group picture

12:30 – 13:30 Lunch break at Sudhaus

Thursday, November 6, 2025

Session chaired by Prof. Marc Masen

- 13:30 Invited speaker**
Climbing the multiscale ladder of bone mechanics from the bench to the bedside
Prof. Philippe Zysset
University of Bern (CH)
- 14:15 The complexity of biological tissues: A multitechnique mechanical study on pancreatic tissues**
Dr. Arianna Callera
Politecnico di Milano & IRCCS Humanitas Research Hospital (IT)
- 14:30 Biomechanical assessment of UVA corneal crosslinking effects: A combined optical coherence elastography and nanoindentation study**
M.Sc. Robert Lohmüller
University of Freiburg (DE)
- 14:45 Separation of humidity, strain rate and temperature effect on the micromechanical properties of cortical ovine bone**
Dr. Christian Minnert
Empa (CH)
- 15:00 Material and tribological characterization of rice grains**
Alejandro Velázquez
EPFL (CH)
- 16:15 Applications of iterated linearization for nonlinear errors-in-variable regression to the calibration of the tip area function**
Anna Charvátová Campbell
Czech Metrology Institute (CZ)
- 16:30 Sensing particles below the surface**
Dr. Megan J. Cordill
Erich Schmid Institute of Materials Science, Austrian Academy of Sciences (AT)
- 16:45 FilmDoctor® goes Anton Paar - 1 click analysis**
Nick Bierwisch
Saxonian Institute of Surface Mechanics (DE)
- 17:00 Closing of the Day / Announcements**
Transfer to Schlossberg
- 18:00 Official diner at Restaurant Schlossberg**

15:15 – 15:45 Coffee break

Session chaired by Prof. Christophe Troadec

- 15:45 Tip sharpness effect on strain localization during nanoindentation**
Dr. Stanislav Zak
Erich Schmid Institute of Materials Science, Austrian Academy of Sciences (AT)
- 16:00 Effect of temperature and strain rate on indentation size effect at shallow indentation depths**
Prof. Petr Haušild
Czech Technical University in Prague (CZ)

Friday, November 7, 2025

08:30 Registration and welcome

Session chaired by Prof. Petr Haušild

09:00 Invited speaker

Shear-induced skin injury - a tribological view to lower-limb prosthetics use

*Prof. Marc Masen
Imperial College London (GB)*

09:45 Rheology and tribology of slurries – from flow curves to Stribeck curves

*Paul Staudinger
Anton Paar (AT)*

10:00 Influence of heat and thermochemical treatments on tribological properties of 3D printed tool steels

*Ing. Vojtěch Bílek
RTI University of West Bohemia (CZ)*

10:15 Zr-based thin layers containing W and Bi elements deposited by DC pulsed magnetron sputtering

*Ing. Anna Krobotová
Technical University of Liberec (CZ)*

10:30 Pseudoelasticity of NiTi alloys studied by nanoindentation

*Jaroslav Čech, PhD
Czech Technical University in Prague (CZ)*

10:45 – 11:15 Coffee break

Session chaired by Šárka Houdková, PhD

11:15 WC–FeCrNi hardmetal coatings as a cobalt-free alternative to WC–CoCr: mechanical and wear properties

*MSc Cosimo Ricci
University of Modena and Reggio Emilia (IT)*

11:30 Influence of combined femtosecond laser texturing and DC pulsed magnetron sputtering on the mechanical and tribological properties of tool steel

*Ing. Michal Krafka
Technical University of Liberec (CZ)*

11:45 Tribological performance and mechanical properties of AlTiN coatings with various Al:Ti ratios

*Jiri Nohava, PhD
Anton Paar TriTec SA (CH)*

**12:00 Closing remarks
End of MSC Seminar**

12:30 – 13:30 Optional Lunch break at Sudhaus