17th INTERNATIONAL SYMPOSIUM ON METALLOGRAPHY, FRACTOGRAPHY AND MATERIALS SCIENCE

METALLOGRAPHY & FRACTOGRAPHY '19

24th – 26th APRIL 2019

ATRIUM HOTEL ***
NOVÝ SMOKOVEC, HIGH TATRA MOUNTAINS, SLOVAKIA
It is our pleasure to welcome you to our regular symposium on metallography, fractography and materials science called “Metallography & Fractography 2019.

It should be noted that two traditional conferences, Metallography and Fractography, which used to be organized separately at regular three-year intervals, have joined into one conference called “Metallography & Fractography 2019“, which will take place between 24th – 26th April 2019 in the High Tatra Mountains in the Slovak Republic.

We have the pleasure to invite you to participate in this traditional event where materials specialists from various parts of the world have been meeting and exchanging their latest insights at three-yearly intervals. These conferences have featured as important events for presentation of results achieved in materials science and engineering. The conference focus widened long ago to cover not only the field of metallic materials, but also numerous modern materials and technologies as well. The participants come from universities, academic research institutions and different branches of industry not only from all corners of Europe, but from overseas as well with an interest in materials science and engineering. Exhibitions of instruments and equipment make it possible for the participants to acquaint themselves with recent achievements in research and investigation technology. Now in this conference we would like to expand the programme to cover new advanced materials and technologies as well as to intensify international contacts.

The Conference Committee wishes to acknowledge the assistance and support that we have received from several individuals and organizations in the preparation of this event.

The Scientific and Organizing Committee wish to create a successful conference in order to spread professional experience in the wider international community of materials scientists and exhibitors.

We strongly believe that through this conference you will acquire many new insights and inspirations for your research. May the latter continue to flourish, furthering the development of new materials, and may the former continue to be a place for meetings and making new contacts for mutual cooperation, in the sincere spirit which has always been traditional for this event.

We would like warmly welcome you and wish to all of you fruitful discussions and a useful stay in the High Tatra Mountains during the 17th International Conference on Metallography, Fractography and Materials Science.
The Conference is organized by INSTITUTE OF MATERIALS AND QUALITY ENGINEERING, FACULTY OF MATERIALS, METALLURGY AND RECYCLING OF THE TECHNICAL UNIVERSITY OF KOŠICE

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in cooperation with
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and the
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INSTITUTE OF EXPERIMENTAL PHYSICS OF THE SLOVAK ACADEMY OF SCIENCES IN KOŠICE, SLOVAKIA

U. S. STEEL KOŠICE, s.r.o.

ŽP RESEARCH & DEVELOPMENT CENTRE, Ltd., PODBREZOVÁ, SLOVAKIA
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  Joint Chairman, Institute of Materials and Quality Engineering, Faculty of Materials, Metallurgy and Recycling of the Technical University of Košice, Košice, Slovakia

- **Ján Dusza**  
  Joint Chairman, Institute of Materials Research, SAS, Košice Slovakia

# INTERNATIONAL SCIENTIFIC COMMITTEE

## Joint Chairmen

- Margita Longauerová  
  Metal Science Society at the Slovak Academy of Sciences, Slovakia

- Akio Nishimoto  
  Kansai University, Osaka, Japan

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
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<tbody>
<tr>
<td>Katalin Balážsi</td>
<td>Hungarian Academy of Sciences, Budapest, Hungary</td>
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<tr>
<td>Kornel Csach</td>
<td>Institute of Experimental Physics of SAS, Košice, Slovakia</td>
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<tr>
<td>Pavel Diko</td>
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<td>Ján Dusza</td>
<td>Institute of Materials Research of SAS, Košice, Slovakia</td>
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<td>Jana Dobrovská</td>
<td>VŠB - Technical University of Ostrava, Czech Republic</td>
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<tr>
<td>Alistair Doig</td>
<td>Defence Academy of the UK, Shrivenham, UK</td>
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<tr>
<td>Roland Haubner</td>
<td>University of Technology Vienna, Institute of Chemical Technologies and Analytics, Vienna, Austria</td>
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<tr>
<td>Ivan Hrivňák</td>
<td>Slovak University of Technology in Bratislava, Trnava, Slovakia</td>
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<td>Pavol Hvizdoš</td>
<td>Institute of Materials Research of SAS, Košice, Slovakia</td>
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<tr>
<td>Christian Chimani</td>
<td>AIT Austrian Institute of Technology GmbH, Wien, Austria</td>
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<td>Kenji Ikeuchi</td>
<td>Osaka, Japan</td>
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<td>Lucyna Jaworska</td>
<td>AGH Krakow, Poland</td>
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<td>Zdeněk Jonšta</td>
<td>VŠB - Technical University of Ostrava, Czech Republic</td>
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<tr>
<td>Josef Kasl</td>
<td>Research and testing Institute Plzeň s.r.o., Plzeň, Czech Republic</td>
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<tr>
<td>Radomila Konečná</td>
<td>University of Žilina, Žilina, Slovakia</td>
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<tr>
<td>Martin Fujda</td>
<td>Institute of Materials and Quality Engineering, Faculty of Metallurgy and Recycling, TUKE, Slovakia</td>
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<tr>
<td>Viera Kohuteková</td>
<td>General Manager, Research and Development USSE, U. S. Steel Košice, s.r.o., Slovakia</td>
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<tr>
<td>Ludvík Kunz</td>
<td>Institute of Physics of Materials AS CR, Brno, Czech Republic</td>
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<tr>
<td>Pavel Lejček</td>
<td>Institute of Physics, AS CR, Prague, Czech Republic</td>
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<tr>
<td>Svätoboj Longauer</td>
<td>Slovak University of Technology at the Slovak Academy of Sciences, Slovakia</td>
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<td>Margita Longauerová</td>
<td>Slovak University of Technology at the Slovak Academy of Sciences, Slovakia</td>
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<tr>
<td>Maroš Martinkovič</td>
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<td>Eva Mazancová</td>
<td>VŠB - Technical University of Ostrava, Czech Republic</td>
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<tr>
<td>Wojciech Maziarz</td>
<td>Polish Academy of Sciences, Krakow, Poland</td>
</tr>
<tr>
<td>Erik Navara</td>
<td>Czech Republic</td>
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</tbody>
</table>
ORGANIZING COMMITTEE

Peter Horňak - Chairman
Pavol Hvízdoš - Co-Chairman
Miloš Matvija - Secretary
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Research and Development USSE, U. S. Steel Košice, s.r.o., Slovakia
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ŽP Research & Development Centre, Ltd., Podbrezová, Slovakia

Jaroslav Pokluda
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President, Železiarne Podbrezová a. s., Slovakia
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Jiří Švejcar
University of Technology, Brno, Czech Republic
Iveta Vasková
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Vlastimil Vodárek
Head of the Department of Material Engineering, VŠB - Technical University, Ostrava, Czech Republic
Petr Zuna
Czech Technical University, Prague, Czech Republic
Vladimír Zvarík
Železiarne Podbrezová a.s., Slovakia
**Place of the Conference:**

ATRIUM HOTEL ***

Nový Smokovec, High Tatra Mountains

**Conference Site**

The conference will be held at the Atrium Hotel *** situated in Nový Smokovec, in the heart of the beautiful High Tatra mountains in Slovakia. Accommodation for all participants is reserved directly at the Atrium Hotel. There are also accommodation possibilities in other hotels or guest-houses in the vicinity, for example the Palace or Bellevue hotels, which are situated quite near the Atrium Hotel.

The Atrium Hotel in the town of Nový Smokovec is a notable venue not only for its specific circular architecture but also thanks to its location at the foot of the peak Slávkovský štít. From the hotel rooms as well as the restaurant with a panoramic view, a marvellous vista of the Tatra Mountains or the sun-lit valley Podtatranská kotlina may be admired. The immediate surroundings of the hotel contain a lot of attractive places for tourists. Only a couple of steps away from the hotel there is the funicular railway Starý Smokovec – Hrebienok, which is the starting-point for many hiking paths. Sports possibilities and various forms of non-traditional entertainment can be taken advantage of both in the summer and the winter seasons.

April is the beginning of the spring season in the High Tatras, so there may still be snow at higher altitudes and therefore opportunities for skiing in the mountains (e.g. at Lomnické sedlo). This part of the High Tatras is a well-known winter sports centre. The average temperature in April is between +2 and +9°C.

**Transport by plane**

One possibility is air travel to Košice from Prague (Czech Republic) or from Bratislava and continue by train to the destination Nový Smokovec. Some of the flight agencies provide flights directly to the town Poprad.

**Transport by train**

Another possibility is to travel by train (International trains – IC) from Prague, Bratislava or Košice to the Poprad – Tatry railway station, continuing by local tram (electric railway - TEŽ) in the direction Štrbské Pleso, reaching your destination in Nový Smokovec. From the tram stop called Nový Smokovec you can walk to the hotel, as it is just 50 m distance. An exact public transport timetable may be obtained via the following web site: www.cp.sk. Alternatively you can take a taxi from Poprad - Tatry.

**Transport by car**

From Bratislava follow highway D1 direction Zilina - Martin - Ruzomberok – Liptovsky Mikulas - Poprad, here turn left and take exit 504 on road No. 534 leading to Stary Smokovec, then turn left toward Strbske Pleso and after 2 km you will reach the hotel (altogether 350 km).

(10 days motorway toll costs 10,00 €, payable online or at filling stations).

From Kosice follow highway D1 direction Presov - Levoca - Poprad, here turn right and take exit 504 on road No. 534, continuing in the direction of Stary Smokovec (altogether 124 km).

In case of special request for transportation, ask the organizer of the conference by email on metalo@konferencie.net or on mobile phone: +421 903 249 123.

**The Conference language**

The official language is English. In exceptional circumstances Slovak and Czech may also be feasible. Contributions will be published in English in the Materials Science Forum periodical.

**Registration and Reservation**

Participants should register themselves using the binding Registration Form available on the website http://konferencie.net/metalo/registration_binding.php and reserve accommodation at the Atrium Hotel as well.

**Accommodation**

For the participants in the Metallography & Fractography 2019 Symposium we have reserved accommodation in the Atrium Hotel**** (the organizers have reserved all the capacity of the hotel, 97 rooms). All reservations of the participants in the Atrium Hotel are arranged by the organizer of the conference. For detailed information about reservations of accommodation, contact us by email on metalo@konferencie.net or on mobile phone: +421 903 249 123. The rooms are equipped with their own bathroom, toilet, television, phone and balcony. The hotel has its own car-park with capacity for 80 cars. There is a swimming pool, wellness centre and sauna in the hotel. Entry to these is included in the room price. Because of its facilities and appealing range of services, the Atrium Hotel is considered an ideal choice not only for holiday-makers spending their family time together but also for business clients who make use of the complete congress centre and unique premises suitable for organizing conferences, education sessions, seminars or workshops. The unique hotel premises offer guests plenty of fun and relaxation in any kind of weather. The hotel facilities include, both for accommodated and non-accommodated guests, three 4Elements relax zones for absolute relief of both your body and your mind, Day Spa massage rooms, Water World 4Elements Aqua with swimming pools, water slides and a relax zone with a pool bar, energizing wellness facilities, a bowling bar with two bowling lanes, and a Wine, Coffee & Tea Lounge.

All requested information about the Atrium Hotel are available on www.atriumhotel.sk
**Accommodation fee**

Accommodation and meals beyond the scope of the Conference should be arranged with the Conference organizers, and on the day before the beginning of the Conference and on the day after its conclusion they are arranged at the same prices as during the Conference. The price list from 23rd to 27th April 2019 is as follows:

Atrium Hotel****+

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Base Price</th>
<th>VAT 20%</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single room</td>
<td>74 €/person/night</td>
<td></td>
<td>90 €/person/night</td>
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<tr>
<td>Double room</td>
<td>43 €/person/night</td>
<td></td>
<td>52 €/person/night</td>
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The price includes 10% VAT and local accommodation tax set at 1 €/person/night.

**Conference fee**

The Conference fee includes participation in all specialist activities, a copy of the Abstract Booklet, which will be distributed during registration on arrival, the Conference Proceedings in the periodical “Materials Science Forum”, which will be distributed after the Symposium, also morning and afternoon refreshments, lunches and evening meals during the Conference.

<table>
<thead>
<tr>
<th>Period</th>
<th>Base Price</th>
<th>VAT 20%</th>
<th>Total Price</th>
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<tr>
<td>Until April 1st, 2019</td>
<td>350 €*</td>
<td>70 €</td>
<td>420 €</td>
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<tr>
<td>After April 1st, 2019</td>
<td>370 €*</td>
<td>74 €</td>
<td>444 €</td>
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<tr>
<td>For PhD. Students</td>
<td>250 €*</td>
<td>50 €</td>
<td>300 €</td>
</tr>
<tr>
<td>For accompanying persons</td>
<td>100 €*</td>
<td>20 €</td>
<td>120 €</td>
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**Options**

<table>
<thead>
<tr>
<th>Option Description</th>
<th>Base Price</th>
<th>VAT 20%</th>
<th>Total Price</th>
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<tbody>
<tr>
<td>Additional payment for exhibitors, exhibition table, per item/3 days</td>
<td>200 €*</td>
<td>40 €</td>
<td>240 €</td>
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<tr>
<td>Advertising publication of the firm name with the logo on the cover of the Proceedings of the International Symposium “Metallography &amp; Fractography” marked as “advertising partner”</td>
<td>500 €*</td>
<td>100 €</td>
<td>600 €</td>
</tr>
<tr>
<td>A4 B&amp;W company advert in Abstract Booklet</td>
<td>150 €*</td>
<td>30 €</td>
<td>180 €</td>
</tr>
<tr>
<td>Colour company advert in Conference Proceedings</td>
<td>500 €*</td>
<td>100 €</td>
<td>600 €</td>
</tr>
<tr>
<td>Placement of company logo (banner) in congress hall during the whole conference</td>
<td>200 €*</td>
<td>40 €</td>
<td>240 €</td>
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</tbody>
</table>

**Food and beverages**

For all participants the catering is as follows:

- April 23: Welcome Drink & small snack
- April 24: Lunch and Grill and Beer Dinner
- April 25: Lunch and Conference Dinner
- April 26: Lunch

Accommodated participants have breakfast included in the price for accommodation.

Beverages during lunches are not included in the conference fee, and participants should pay for these themselves. Lunches and dinners beyond the scope of the given catering schedule are paid for individually by the participants.

**Payment**

Please send your payment with the registration application by April 1st, 2019. Exceptionally, it is possible to pay the Conference Fee at Registration in the Atrium Hotel. The application form together with confirmations of Conference fees paid are to be returned online via our website, or by E-mail to metalo@konferencie.net. After April 1, 2019 participants must pay an increased conference fee of 370 €/person, plus VAT.

Bank details: Fio banka, a.s., Slovak Republic, IBAN: SK22 8330 0000 0023 0081 5059, SWIFT CODE: FIOZSKBAXXX, in favour of Lumakon, s.r.o. Košice, Na Šajbe 1A, 040 01 Košice (company ID No: 47082577, VAT Reg. No.: SK2023759925, registered for VAT). Please remember to include the name of the organization and of the participant in the transfer order.

**Cancellation**

It is regretted that no refund can be made or invoices cancelled after the date April 1st, 2019. In this case a copy of the Materials Science Forum periodical will be mailed to non-attending participants. While substitution may be made at any time, we need however to be informed. We ask authors to note that their contributions will be published in Materials Science Forum only after payment of the appropriate Conference fee is received.
For cancellation of the accommodation the same conditions which apply in the Atrium Hotel are valid.

**Registration Desk**
The Conference Registration Desk will be open in the lobby of the Atrium Hotel at the following hours:

- **Tuesday 23rd April 2019** 05.00 PM - 10.00 PM
- **Wednesday 24th April 2019** 07.00 AM - 06.00 PM
- **Thursday 25th April 2019** 08.00 AM - 12.00 noon
- **Friday 26th April 2019** 08.00 AM - 12.00 noon

**Scientific programme**
Specialist activities will begin on Wednesday, April 24th 2019. Contributions will be presented as invited lectures, normal lectures and in the form of posters.

**Lecture sessions**
The speakers of invited lectures will be allowed to talk for 25 minutes, while other normal lectures will have a maximum 10 minutes. After each lecture five minutes of discussion time are planned, and there may be general discussion at the end of each session. With this in mind, and as there is only a short time for each presentation of each lecture, please be careful in the preparation of your lecture. For your presentation you can use a data projector.

It is fully recommended to give the presentation of the oral presentation to the technician the day before the presentation on a USB key, at least in the morning on the date of the presentation.

**Poster sessions**
Those who have applied to present a poster will exhibit their results in the lobby of the conference room during sessions according to the scientific programme. Visits to poster exhibition sessions include personal discussions with authors and are followed by a more formal chaired discussion session. Poster size is limited to 1 m² (height x width = 1.0 x 0.9 m). The posters are divided in line with the specialist programme into three day-sessions, and all posters in one session will be exhibited throughout the day of that session. Authors are urged to use pictures and texts which are clearly visible, and to avoid excessively long texts.

The Best Poster competition is included in the programme of the Symposium. One Best Poster will be adjudicated each day, i.e. one for each poster session 1, 2, 3.

The best Metallographic & Fractographic Photo competition is included in the Symposium programme too. Please apply for this competition at the Symposium Registration Desk. This competition will be in two sections:

- the best scientific photograph
- the most interesting curiosity

**Photographs with format 12 x 18 cm are recommended, or larger. The technical and aesthetic quality of the pictures will be taken into account in the judging. The photographs will be displayed on the poster board during the Conference.**

**Exhibition**
During the Conference an exhibition of instruments and devices from various companies will be organized. The list of companies taking part in the exhibition, and which also sponsor this Symposium, is as follows: ZENA-R Slovakia, s.r.o., TSI System s.r.o., Anamet Slovakia s.r.o., Edlin s.r.o., JEOL (Europe) SAS – Organization Division, Kvant spol. r. o., Metalco Testing s.r.o.

**Conference Social Programme**

### April 23, 2019
**Welcome Drink**
There will be a Welcome Drink Reception in the restaurant of the Atrium Hotel, 1st floor, at 7 PM on Tuesday, 23rd April 2019. All registered participants are invited to attend. The Reception includes a small snack (not dinner). During that evening our leading astronomer Dr. Rušín will present another of his very popular lectures, this time on the topic “Colorful universe” including slide presentations of the Tatras landscape.

Dress code - casual

### April 24, 2019
**Grill & Beer – Dinner**
The Grill & Beer Dinner will be held on Wednesday, 24th April 2019 at 7 PM. It will be an informal occasion with a minimum of speeches. Grilled specialities on buffet tables will be served together with traditional Slovak beer – Zlatý Bažant 73.

Dress code - casual

### April 25, 2019
**Conference tour - Bachledka – Treetop Walk**
Bachledka Treetop Walk is situated in the heart of the majestic forests of the Pieniny National Park. It will show you the unique scenery of the Belianske Tatras. It enables people to explore the local forests together. You will be immersed in the forest and get to know and learn about many animals and plants that can be found only in a few places of the world.

On the more than 600 metres long route you will go high up through the forest with various animal and plant species, finding many surprises and learning some interesting facts. There is a 32 metres high observation tower offering a magnificent view and an incomparable experience.

This Conference tour is for all the participants who ordered it in their binding application form. The departure of the bus is planned at 2 PM from the parking lot in front of the Atrium Hotel. Exceptionally, you can decide to apply for the Conference tour at Registration, but we are
limited by the capacity of the bus/buses. The conference tour costs 15 € (VAT included). The price covers transport by bus and entry ticket.

**Conference Dinner**
You are kindly invited to the Conference Dinner which will be held in the restaurant of the Atrium Hotel, 1st floor from 7.00 PM to 12.00 midnight. A traditional gipsy folk band will take care of our good mood.
Dress code – business formal
TUESDAY 23rd APRIL 2019

17.00 – 22.00  Registration, The Conference Registration Desk
19.00 – 20.30  Welcome Drinks Reception, Hall 3

Lecture

20.30 – 21.30  “Colorful universe” including slide presentations of the Tatras landscape
V. Rušín
Astronomical Institute of SAS,
Tatranská Lomnica, SR

WEDNESDAY 24th APRIL 2019

7.00 – 8.30  Registration, The Conference Registration Desk

Morning Sessions

Hall 1

8.30 – 9.00  Opening of the Symposium
9.00 – 10.00  Plenary Session 1
10.00 – 10.30  Coffee
10.30 – 11.00  Exhibitors Presentation
11.00 – 12.00  Poster Session 1 (Nos. P3, P20, P11, P2, P35, P8, P7, P45, P46, P12, P14, P27, P31, P17, P6, P21)
Visit of the Exhibition
12.00 – 14.00  Lunch

Afternoon Sessions

Hall 1

14.00 – 15.15  Parallel Sessions
Session 1  Process simulation, metallographic methods
Session 2  Solid state transformation
15.15 – 15.45  Exhibitor Presentation
15.45 – 16.15  Coffee
16.15 – 17.30  Parallel Sessions
Session 3  Interrelationship microstructure and material properties
Session 4  Welding

Hall 2

14.00 – 15.15  Parallel Sessions
Session 5  Fractures, defects, material degradation
15.30 – 16.00  Coffee
16.00 – 17.30  Parallel Sessions
Session 6  Fatigue and creep
17.30  Meeting of the Metal Science Society Committee at the Slovak Academy of Sciences
19.00 – 24.00  Grill & Beer – Dinner
THURSDAY 25th APRIL 2019

MORNING SESSIONS
HALL 1

8.00 – 9.00  PLENARY SESSION 2
9.00 – 9.30  EXHIBITOR PRESENTATION
9.30 – 10.00 Coffee
10.00 – 11.00 POSTER SESSION 2 (Nos. P37, P34, P33, P23, P26, P25, P24, P32, P42, P43, P15, P16, P13, P9)
   VISIT OF THE EXHIBITION
11.00 – 12.00 PARALLEL SESSIONS
   Session 7 Nonferrous Alloys and other Advanced Materials
12.00 – 14.00 Lunch
14.00 – 18.00 Conference Tour
19.00  Conference Dinner

FRIDAY 26th APRIL 2019

MORNING SESSIONS
HALL 1

8.00 – 9.00  PLENARY SESSION 3
9.00  Coffee
   VISIT OF THE EXHIBITION
10.30 – 11.00 PLENARY SESSION 4
11.00 – 11.30 PARALLEL SESSION
   Session 8 Coatings
11.30  Closing ceremony
12.00 – 14.00 Lunch
**MORNING SESSIONS**

**HALL 1**

**PLENARY SESSION 1**

Chairs: M. LONGAUEROVÁ, A. NISHIMOTO

9.00 Boronizing of AISI 316L stainless steel using spark plasma sintering technique
A. NISHIMOTO¹, T. KUBO²
¹ Department of Chemistry and Materials Engineering, Kansai University, Osaka, Japan
² Graduate school of Science and Engineering, Kansai University, Osaka, Japan

9.30 Novel method of producing an ausferritic steel displaying excellent combination of mechanical properties
P. RUBIN¹,², R. LARKER³, E. NAVARA³, M.-L. ANTTI¹
¹ Division of Materials Science, Luleå University of Technology, Luleå, Sweden
² Rubin-Materialteknik, Luleå, Sweden
³ Jihlava
⁴ Ausferritic AB, Vindeln, Sweden

10.00 Coffee

**HALL 1**

**EXHIBITOR PRESENTATION**

Chairs: P. HORŇAK, P. RUBIN

10.30 Possibility of total automatization of metallographic sample preparation for small and large laboratories
D. ČERNICKÝ, P. ČVANDA
Metalco Testing s.r.o., Czech Republic

11.00 – 12.00 POSTER SESSION 1 (Nos. P3, P20, P11, P2, P35, P8, P7, P45, P46, P12, P14, P27, P31, P17, P6, P21)
VISIT OF THE EXHIBITION
Chairs: P. PALČEK, A. JURÍKOVA

12.00 – 14.00 Lunch
**AFTERNOON SESSIONS**

**HALL 1 PARALLEL SESSIONS**  
**Session 1 PROCESS SIMULATION, METALLOGRAPHIC METHODS**  
**Session 2 SOLID STATE TRANSFORMATION**  
Chairs: J. DOBROVSKÁ, S. STROBL

14.00  
The influence of surface dipping and bulk filling agents on properties of high-speed grinding wheels: Materialographic-based numerical modelling  
L. ČELKO1, P. SKALKA1, K. SLÁMEČKA1, D. JECH1, L. KLAKURKOVA1, I. ROČŇÁKOVÁ1, J. ŠVEJCAR1, D. HOLEMÝ2, J. KAISER2  
1 Brno University of Technology, Central European Institute of Technology, Brno, Czech Republic  
2 Best - Business, A.S., Kunštát, Czech Republic

14.15  
Metallography as a tool for laser processes optimizing  
S. NĚMEČEK1, I. ČERNÝ2, N. GANEV3, J. KEC2  
1 RAPTECH s.r.o., Zruc – Senec, Czech Republic  
2 Svum A.S., Czech Republic  
3 Cvut Praha, Czech Republic

14.30  
Possibilities for using new types of additive materials for hardfacing  
J. BREZINA, J. BREZINOVÁ, J. VIŇÁŠ  
Technical University of Košice, Faculty of Mechanical Engineering, Košice, Slovak Republic

14.45  
Investigation of the diffusion couple ductile cast iron / iron  
S. STROBL, R. HAUBNER  
TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria

15.00  
Engineering of non-metallic inclusions in structural steels with enhanced machinability  
S., M. PYTEL1, M. ZADEČKI2  
1 State University of Applied Sciences, Institute of Technology, Nowy Sacz, Poland  
2 StalProdukt SA, Bochnia, Poland

**EXHIBITOR PRESENTATION**

15.15  
Case depth analysis in 60 seconds or 60 minutes  
V. GROMEŠ, R. ZAPLETAL  
TSI System s.r.o., Brno, Czech Republic

15.45  
Coffee

**HALL 1 PARALLEL SESSIONS**  
**Session 3 INTERRELATIONSHIP BETWEEN MICROSTRUCTURE AND MATERIAL PROPERTIES**  
**Session 4 WELDING**  
Chairs: L. PARILÁK, A. SCHMID

16.15  
Texture evolution during cold drawing of steel tube with respect to the stress-strain state  
L. PARILÁK1,2, P. BURIK1, P. BELLA1, P. KEJZLAR2  
1 ŽP Research and Development Centre, Ltd., Podbrezová, Slovak Republic  
2 Technical University of Košice, Faculty of Manufacturing Technologies with a Seat in Prešov, Prešov, Slovak Republic  
3 Technical University of Liberec, Faculty of Mechanical Engineering, Department of Material Science, Liberec, Czech Republic

16.30  
Microstructure influenced by controlled rolling, cooling and thermal processing of seamless tubes made of steel 25CrMo4  
P. KAWULOK1, I. SCHINDLER1, S. RUSZ2, R. KAWULOK1, P. OPÉLA1, R. TURON2, R. JURČA2  
1 VSB - Technical University of Ostrava, Faculty of Materials Science and Technology, Ostrava – Poruba, Czech Republic  
2 Trinecké železárny, a. s., Trinec, Czech Republic

16.45  
Microstructure, substructure and mechanical properties of 9CrNB steel after tempering  
P. BEKEČ1, L. PARILÁK1,2, P. BERAXA1,2, M. FUJDA3, M. MATVIJA3  
1 ŽP Research and Development Centre, Ltd., Podbrezová, Slovak Republic  
2 Faculty of Manufacturing Technologies with a Seat in Presov, Prešov, Slovak Republic  
3 Faculty of Materials, Metallurgy and Recycling, Košice, Slovak Republic

17.00  
On the surface welding of pearlitic rails: The control of dilution and microstructure  
P. SUWANPINIJ1, M. HÜBNER2, P. CHOEYCHOM2, T. THONONDAENG3, B. SUKSAWAT4, P. KUMMA5, G. LOTHONGKUM6  
1 The Sirindhorn International Thai-German Graduate School of Engineering (TGGS), King Mongkut’s University of Technology North Bangkok, Thailand  
2 Steel Institute, RWTH Aachen University, Aachen, Germany  
3 Department of Materials and Production Technology Engineering, Faculty of Engineering, King Mongkut’s University of Technology North Bangkok, Bangkok, Thailand  
4 Department of Welding Engineering Technology, College of Industrial Technology, King Mongkut’s University of Technology North Bangkok, Bangkok, Thailand  
5 Department of Teacher Training In Mechanical Engineering, Faculty of Technical Education, King Mongkut’s University of Technology North Bangkok, Bangkok, Thailand  
6 Department of Metallurgical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand
<table>
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<th>Time</th>
<th>Title</th>
<th>Authors/Institutions</th>
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<tbody>
<tr>
<td>14.00</td>
<td>High temperature fracture casts exhaust tract gas piston engines</td>
<td>B. SKRBEK¹, P. KEJZLAR¹, M. ŠVEC²</td>
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<td>¹ Researcher, Jablonec Nad Nisou, Czech Republic</td>
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<td>² Researcher, Liberec, Czech Republic</td>
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<tr>
<td>14.15</td>
<td>Fractography of additively manufactured titanium alloy: Influence of post-processing treatment</td>
<td>M. ROUDNICKA, D. VOJTECH</td>
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<td>Department of Metals and Corrosion Engineering, University of Chemistry and Technology Prague, Prague, Czech Republic</td>
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<tr>
<td>14.30</td>
<td>Fracture analysis of polymer-metal joints produced by injection moulding</td>
<td>J. W. KACZMAR, O. TRZASKA</td>
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<td>Wroclaw University of Science and Technology, Wroclaw, Poland</td>
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<td>14.45</td>
<td>Evaluation of Corroded Structure for Steam Turbines Steel Alloy</td>
<td>M. ČERNÝ</td>
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<td>Czech Technical University in Prague, Klokner Institute, Prague, Czech Republic</td>
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<tr>
<td>15.00</td>
<td>Influence of boric acid and gamma radiation on selective sorbents</td>
<td>D. MARUŠÁKOVÁ¹, P. KÚS¹, L. SZATMAR², I. A. PROKÚPKOVÁ²</td>
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<td>¹ Research Centre Rež, Husinec - Rež, Czech Republic</td>
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<td>² ÚJV Rež, A.S., Husinec-Rež, Czech Republic</td>
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<tr>
<td>15.30</td>
<td>Coffee</td>
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</tbody>
</table>
HALL 2
PARALLEL SESSIONS
Session 6 FATIGUE AND CREEP
Chairs: R. KONEČNÁ, L. KUNZ

16.00 3D Textural Analysis of Fatigue Fracture Surfaces
H. LAUSCHMANN, K. TESAŘ K., T. VRONKOVÁ
Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Dept. of Materials, Prague, Czech Republic

16.15 Near-surface structure and fatigue crack initiation mechanisms of as-built SLM Inconel 718
R. KONECNA¹, G. NICOLETTO²
¹ University of Zlina, Zlina, Slovak Republic
² University of Parma, Parma, Italy

16.30 Character of fatigue damage under tensional and torsional loading of 316L stainless steel
A. CHLUPOVÁ¹, T. KRUML¹,2, J. MAN¹,
V. MAZÁNOVÁ¹, M. HECZKO¹, L. POCZKLÁN¹
¹ Institute of Physics of Materials, Czech Academy of Sciences, Brno, Czech Republic
² CEITEC-IPM, Brno, Czech Republic

16.45 The effect of prior surface roughness on fatigue strength of nitrided specimens
M. KIANICOVÁ¹, P. ŠANDERA²,³,
J. HORNÍKOVÁ²,³, D. KOTTFER¹, J. POKLUDA¹,²,³
¹ Alexander Dubcek University of Trencin, Faculty of Special Technology, Trencín, Slovak Republic
² Brno University of Technology, Central European Institute of Technology, Brno, Czech Republic
³ Brno University of Technology, Faculty of Mechanical Engineering, Brno, Czech Republic
⁴ Technical University of Košice, Faculty of Mechanical Engineering, Košice, Slovak Republic

17.00 Characterization of microstructure of crept samples of dissimilar weld joint using standard and advanced electron microscopy techniques
J. KASL¹, D. JANDOVÁ¹, Š. MIKMEKOVÁ²,
O. AMBROŽ²
¹ Výzkumný a zkušební ústav Ptzen s.r.o., Ptzen, Czech Republic
² Institute of Scientific Instruments of the CAS, v.v.v., Brno, Czech Republic

17.15 Evaluation of cavitation damage in a pipe bend made of 0.5Cr-0.5Mo-0.3V steel by optical metallography and replica method
Z. KUBOŇ, J. KOŠNOVSKÁ, G. ROŽNOVSKÁ
Materiálový a metalurgický výzkum, s.r.o., Ostrava, Czech Republic

17.30 Meeting of the Metal Science Society Committee at the Slovak Academy of Sciences

19.00 – 24.00 Grill & Beer – Dinner
### MORNING SESSIONS

**HALL 1**

**PLENARY SESSION 2**

**Chairs:** A. SCHMID, R. HAUBNER

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<tr>
<td>8.00</td>
<td>The copper-arsenic eutecticum and the Cu3As phase</td>
<td>R. HAUBNER, S. STROBL</td>
<td>TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria</td>
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<tr>
<td>8.30</td>
<td>Metallographic documentation of the degradation of iron and nickel based alloys in HCl and H2S containing environments, between 480 – 680 °C</td>
<td>A. SCHMID(^1), G. MORI(^1), R. HAUBNER(^2), S. HÖNIG(^3)</td>
<td>1. Montanuniversität Leoben, Franz Josef Straße 18, A-8700 Leoben, Austria</td>
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<td></td>
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<td>2. Technische Universität Wien, Getreidemarkt 9, A-1060 Vienna, Austria</td>
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<td>3. OMV E&amp;P GmbH, Tech Center &amp; Lab, Protteser Straße 40, A-2230, Gänserndorf, Austria</td>
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### EXHIBITOR PRESENTATION

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<tr>
<td>9.00</td>
<td>Thermo Fisher Scientific</td>
</tr>
<tr>
<td>9.30</td>
<td>Coffee</td>
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</table>
HALL 1
PARALLEL SESSIONS
Session 7 NONFERROUS ALLOYS AND OTHER ADVANCED MATERIALS
Chairs: D. VOJTĚCH, M. FUJDA

11.00 Magnesium alloy (WE43) produced by 3D printing (SLM)
P. KRIŠTOFOVÁ1, D. VOJTĚCH1, D. PALOUŠEK2, J. SUCHÝ2
1 Faculty of Chemical Technology, Department of Metals and Corrosion Engineering, University of Chemistry and Technology Prague, Prague, Czech Republic
2 Faculty of Mechanical Engineering, Department of Reverse Engineering and Additive Technologies, Brno University of Technology, Brno, Czech Republic

11.15 Microscopy methods contribution in phase diagram calculations of Zr-based alloys after high-temperature oxidation
P. GÁVELOVÁ1, P. HALODOVÁ3, I. A. PROKÚPKOVÁ1, J. KREJČÍ2
1 Research Centre Rež, Husinec – Rež, Czech Republic
3 UJIP Praha, a. s., Praha – Zbraslav, Czech Republic

11.30 Small Scale Plastic Yielding of Mg Alloys Assessed with Nanoindentation
J. NĚMEČEK, J. MAŇÁK, J. NĚMEČEK
1 Czech Technical University in Prague, Faculty of Civil Engineering, Prague, Czech Republic
2 Institute of Physics of ASCR, Prague, Czech Republic

11.45 WC-FeCr Cemented Carbides with Ni Free Austenitic Binder
M. TARRASTE, J. KÜBARSEPP, K. JUHANI, M. KOLNES, M. VILJUS, A. MERE
1 Department of Mechanical and Industrial Engineering, Tallinn University of Technology, Tallinn, Estonia
2 Department of Materials and Environmental Technology, Tallinn University of Technology, Tallinn, Estonia

12.00 – 14.00 Lunch
14.00 – 18.00 Conference Tour
19.00 Conference Dinner
MORNING SESSIONS

HALL 1
PLENARY SESSION 3
Chairs: J. DUSZA, E. NAVARA

8.00 Characterisation of chemical vapour deposited AlHfN coatings
E. RAUCHENWALD1, M. LESSIAK2, R. WEISSENBACHER3, S. SCHWARZ3, R. HAUBNER1
1 TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria
2 Boehlerit GmbH & Co. KG, Kapfenberg, Austria
3 TU Wien, USTEM, Vienna, Austria

8.30 Small-scale mechanical testing of hardmetals: from micro to nano approach
J. DUSZA
Institute of Materials Research of SAS, Košice, Slovak Republic

9.00 Coffee

9.30 POSTER SESSION 3 (Nos. P4, P10, P5, P36, P30, P29, P28, P19, P40, P18, P22, P39, P44, P1, P38, P41)
VISIT OF THE EXHIBITION
Chairs: J. NĚMEČEK, D. JANDOVÁ

PLENARY SESSION 4
Chairs: P. DIKO, P. HORŇAK

10.30 Microstructure of glass coated Heusler alloy micro fibres
P. DIKO1, V. KAVEČANSKÝ2, M. PEKARČÍKOVÁ2, T. RYBA3, Z. VARGOVÁ4, R. VARGA3
1 Institute of Experimental Physics, Slovak Academy of Sciences, Košice, Slovak Republic
2 The Faculty of Materials Science and Technology STU, Trnava, Slovak Republic
3 Institute of Physics, UPJS Kosice, Košice, Slovak Republic
4 Institute of Chemistry, UPJS Kosice, Košice, Slovak Republic
11.00  Thermal cyclic behaviour of conventional YSZ and mullite-YSZ thermal barrier coatings
D. JECH\textsuperscript{1}, P. KOMAROV\textsuperscript{1}, M. REMEŠOVÁ\textsuperscript{1}, L. DYČKOVÁ\textsuperscript{1}, K. SLÁMEČKA\textsuperscript{1}, S. RAVASZOVÁ\textsuperscript{2}, K. DVOŘÁK\textsuperscript{2}, L. ČELKO\textsuperscript{2}
\textsuperscript{1} Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic
\textsuperscript{2} Brno University of Technology, Faculty of Civil Engineering, Brno, Czech Republic

11.15  Influence of RF plasma jet surface treatment on wetting behavior of yttria stabilized zirconia SPS coatings
P. KOMAROV\textsuperscript{1}, D. JECH\textsuperscript{1}, L. ČELKO\textsuperscript{1}, B. PIJÁKOVÁ\textsuperscript{2}, M. KOROUS\textsuperscript{2}, D. ZHOU\textsuperscript{3}, R. VAßEN\textsuperscript{3}
\textsuperscript{1} Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic
\textsuperscript{2} Faculty of Science, Masaryk University, Brno, Czech Republic
\textsuperscript{3} Institute of Energy and Climate Research, Forschungszentrum Jülich GmbH, Jülich, Germany

11.30  Closing Ceremony

12.00 – 14.00  Lunch
### POSTER SESSION 1
**Chairs:** P. PALČEK, A. JURÍKOVÁ

**PROCESS SIMULATION, METALLOGRAPHIC METHODS**

<table>
<thead>
<tr>
<th>P3</th>
<th>Estimation of triaxial stress state of formed pieces using quantitative metallography</th>
<th>M. MARTINKOVIC1, M. VYSKOCOVÁ1, M. NECPAL1, S. MINÁŘÍK2</th>
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<td>1 Institute of Production Technologies, Faculty of Material Science and Technology in Trnava, Slovak University of Technology in Bratislava, Trnava, Slovak Republic</td>
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<td>2 Advanced Technologies Research Institute, Faculty of Material Science and Technology in Trnava, Slovak University of Technology in Bratislava, Trnava, Slovak Republic</td>
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</table>

| P20 | A thermomechanical model of retention of a diamond particle in a matrix based on Fe | J. BOROWIECKA-JAMROZEK, J. LACHOWSKI |
|     |                                                                                   | Kielce University of Technology, Kielce, Poland |

| P11 | SEM imaging of in-situ tensile testing of 27CrNiMoV steel | M. BYSTRIANSKÝ, L. KUČEROVÁ, Z. BUNDA |
|     |                                                                                   | Regional Technical Institute, University of West Bohemia in Pilsen, Regional Technical Institute, Pilsen, Czech Republic |

**SOLIDIFICATION AND SOLID STATE TRANSFORMATION**

| P35 | The simultaneous fabrication of multiple castings using a frozen mold casting method | Y. HOSHIYAMA1, K. NAKASHIMA2, H. MATSUMOTO3 |
|     |                                                                                   | 1 Kansai University, Faculty of Chemistry, Materials and Bioengineering, Osaka, Japan |
|     |                                                                                   | 2 Kansai University, Graduate School of Science and Engineering, Osaka, Japan |
|     |                                                                                   | 3 Sankyo Alloy Casting Co., Ltd, Osaka, Japan |

| P8  | The effect of heat-treatment on the phase stability of fe-28Al-15Si-2Mo alloy | V. VODIČKOVÁ, M. ŠVEC, P. HANUS, P. PROKOPČÁKOVÁ PAZOURKOVÁ |
|     |                                                                                   | Technical University of Liberec, Faculty of Engineering, Department of Material Science, Liberec, Czech Republic |

| P7  | The microstructure evolution of fe-28Al-15Si-0.22r alloy during different heat-treatment | M. ŠVEC, V. VODIČKOVÁ, P. HANUS, V. KELLER |
|     |                                                                                   | Technical University of Liberec, Faculty of Engineering, Department of Material Science, Liberec, Czech Republic |

**INTERRELATIONSHIP BETWEEN MICROSTRUCTURE AND MATERIAL PROPERTIES**

| P45 | Structural nature of ZnAl4Cu1 alloy plasticity affected by various technological treatments | M. LONGAUREROVÁ1,2, M. HODUR3, M. VOJTKO4, P. ZUBKO5, M. GLOGOVSKÝ5, M. MATVIJA5, T. KVAČKA5 |
|     |                                                                                   | 1 Technical University of Košice, Košice, Slovak Republic |
|     |                                                                                   | 2 Metal Science Society at the Slovak Academy of Sciences |
|     |                                                                                   | 3 BROCKMETALS s.r.o., Košice, Slovak Republic |
|     |                                                                                   | 4 Institute of Materials Research of the Slovak Academy of Sciences in Košice, Slovak Republic |
|     |                                                                                   | 5 U. S. Steel Košice, s.r.o., Research & Development USSE, Košice, Slovak Republic |

| P46 | Microstructural and fractographic analysis of CuAlNi shape memory alloy before and after heat treatment | I. IVANIČ1, M. GOJIĆ1, S. KOŽUH2, B. KOSEC2 |
|     |                                                                                   | 1 University of Zagreb, Faculty of Metallurgy, Sisak, Croatia |
|     |                                                                                   | 2 University of Ljubljana, Faculty of Natural Sciences and Engineering, Ljubljana, Slovenia |

| P12 | Comparison of microstructure and mechanical properties of additively manufactured and conventional maraging steel | A. JANDOVÁ, L. KUČEROVÁ, I. ZETKOVÁ |
|     |                                                                                   | Regional Technical Institute - Department of Metallurgy, Faculty of Mechanical Engineering, University of West Bohemia in Pilsen, Pizen, Czech Republic |

| P14 | Effect of cold working on microstructure and mechanical properties of 08Ch18N10T steel | A. MATERNA1, P. HAUSÍKD, J. ONDRÁČEK1, J. ADÁMEK1, P. PETELOVÁ2 |
|     |                                                                                   | 1 Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Department of Materials, Prague, Czech Republic |
|     |                                                                                   | 2 UV Řež, a. s., Integrity and Technical Engineering Division, Husinec, Czech Republic |

| P27 | Metallographic analysis of components for decentralized micro-power systems produced by additive manufacturing | B. BRYKSI STUNOVÁ1, V. NOVOTNÝ2, P. ZIKMUND3 |
|     |                                                                                   | 1 CTU in Prague, Faculty of Mechanical Engineering, Department of Manufacturing Technology, Czech Republic |
|     |                                                                                   | 2 CTU in Prague, Faculty of Mechanical Engineering, Department of Energy Engineering, Czech Republic |
|     |                                                                                   | 3 Metal 3D, s.r.o., Czech Republic |

| P31 | Structure and properties of bakelite bonded grinding wheels | VENDULA BEDNÁŘÍKOVÁ1, DAVID JECÍ1, LADISLAV ČELKO1, DANIEL HOLEMÝ2 |
|     |                                                                                   | 1 Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic |
|     |                                                                                   | 2 Best – Business, a. s., Kunštát, Czech Republic |
### POSTER SESSION 2

**Chairs: E. TILLOVÁ, Y. HOSHIYAMA**

#### FRACTURES, DEFECTS AND MATERIAL DEGRADATION

**P37** Analysis of causes of defects of appearance in wire drawing
- J. ŠVEJCAR, M. JULIŠ, L. KLAKURKOVÁ, P. GEJDOŠ, M. HORYNOVÁ
  - Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic

**P34** Analysis of causes of baby stroller construction damage
- L. KLAKURKOVÁ, M. JULIŠ, P. GEJDOŠ
  - Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic

**P33** Metallographic analysis of stainless steel inner shaft of centrifugal pump
- P. GEJDOŠ, L. KLAKURKOVÁ, M. JULIŠ
  - CEITEC-Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic

**P23** Investigation of screw failed during their installation
- M. DEMČÁKOVÁ, A. MAŠLEJOVÁ, P. ZUBKO, L. HRABČÁKOVÁ, S. HOCKICKOVÁ, P. VRANEC, P. KALMÁR, A. DROTÁR
  - U. S. Steel Košice, s.r.o., Research & Development USSE, Košice, Slovak Republic

**P26** Rarely occurring defects on tinplates
- P. VRANEC, S. HOCKICKOVÁ, A. MAŠLEJOVÁ, M. DEMČÁKOVÁ, L. HRABČÁKOVÁ, P. ZUBKO, P. KALMÁR, A. DROTÁR
  - U. S. Steel Košice, s.r.o., Research & Development USSE, Košice, Slovak Republic

#### FATIGUE

**P15** Detection of early stage of fatigue changes in non-alloy steel using residual magnetic field method
- P. ANTONIK-POPIOŁEK, J. GŁÓD, Z. JURASZ
  - 1 Faculty of Materials, Civil and Environmental Engineering, University of Bielsko-Biała, Poland
  - 2 BOSMAL Automotive Research &Development Institute, Bielsko-Biała, Poland

**P16** Estimating of the size of the maximum non-metallic inclusions in martensitic steels and their influence on fatigue properties
- J. KASL, M. MATĚJOVÁ, Z. ŠPIRIT
  - 1 Výzkumný a zkušební ústav Plzen s.r.o., Plzen, Czech Republic
  - 2 Research Centre Rez, Plzen, Czech Republic

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**P25** Continuous chemistry-based surface defects situated on the steel strips edges
- M. GABÁNIOVÁ
  - U. S. Steel Košice, s.r.o., Research & Development USSE, Košice, Slovak Republic

**P24** On defects of steel sheets welds joined by laser welding
- A. DROTÁR, P. ZUBKO, A. MAŠLEJOVÁ, P. KALMÁR, P. VRANEC, S. HOCKICKOVÁ, M. DEMČÁKOVÁ, L. HRABČÁKOVÁ
  - U. S. Steel Košice, s.r.o., Research & Development USSE, Košice, Slovak Republic

**P32** Analysis of corrosion resistance of heat exchanger plates made of AISI 316L steel
- M. JULIŠ, L. KLAKURKOVÁ, P. GEJDOŠ
  - Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic

**P42** Microstructural and chemical analysis of military steel from WWII as part of sculpture
- M. MACHCINÍK, P. HORNÁK, M. HALAMA, J. BARTUSZ, K. KOVAĽ
  - 1 Technical University of Košice, Faculty of Arts, Košice, Slovak Republic
  - 2 Technical University of Košice, Faculty of Materials, Metallurgy and Recycling, Košice, Slovak Republic
  - 3 Slovak Academy of Sciences, Institute of Materials Research, Košice, Slovak Republic

**P43** Electron microscopy study and detail chemical analysis of structures of military steel from WWII as part of sculpture
- M. MACHCINÍK, P. HORNÁK, M. HALAMA, J. BARTUSZ, K. KOVAĽ
  - 1 Technical University of Košice, Faculty of Arts, Košice, Slovak Republic
  - 2 Technical University of Košice, Faculty of Materials, Metallurgy and Recycling, Košice, Slovak Republic
  - 3 Slovak Academy of Sciences, Institute of Materials Research, Košice, Slovak Republic
**NONFERROUS ALLOYS**

**P4** Consequences of inappropriate temperatures of the solution heat treatment in Al-Si-Cu cast alloys  
L. KUCHARIKOVÁ, E. TILLOVÁ, M. CHALUPOVÁ  
University of Žilina, Department of Materials Engineering, Žilina, Slovak Republic

**P10** Influence of cyclic loading on the internal friction measured on magnesium alloys AZ31, AZ61 and AZ91  
M. UHRÍČIK, Z. DRESSLEROVÁ, P. PALČEK, T. ORŠULOVÁ, M. HANUSOVÁ  
University of Žilina, Department of Materials Engineering, Žilina, Slovak Republic

**P5** Effects on microstructure and corrosion behavior of a heat treated CuZn36Pb2 brass  
R. HAUNBER, S. STROBL, P. LINHARDT  
TU Wien, Institute of Chemical Technologies and Analytics, Vienna, Austria

**P36** Anodizing of pure magnesium in sodium hydroxide electrolyte solution  
M. PÁLENÍČEK, M. PAPULA, M. REMEŠOVÁ, D. JECH, P. KOMAROV, L. KLAKURKOVÁ, I. ROČNÁKOVÁ, L. ČELKO  
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**P30** Characterization of high-speed alumina abrasive grinding wheel  
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**P29** Analysis of pop-ins at nanoindentation of Fe-Ni-B metallic glass  
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**P28** Size effect in plastic deformation and failure of metallic glasses  
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**P19** Preparation and characterization of SnO2-based nano/microfibers for gas sensors  
E. MÚDRA, I. SHEPA, A. KOVALCIKOVA, O. MILKOVIC, J. DUSZA  
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**P40** The influence of TiO2 fibres addition on the GdBCO superconductors microstructure  
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**P18** Step-sintering of Fe-(1-3)%Mn-0.8%C steels  
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**P22** Microstructural, mechanical and corrosion behaviour of sintered iron-based hollow sphere materials  
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**P39** Recovery of the single phase structure of magnetocaloric material prepared by the spark plasma sintering method  
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P44 Preparation of cerium stabilized zirconia bulk ceramics by spark plasma sintering
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P1 The failure of carbon fiber reinforced composite analyzed by acoustic emission
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P38 Microstructure characteristics, tribology and nano-hardness of plasma sprayed NiCrRe coating
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P41 Microstructure characteristics, nano-hardness and tribology of NiCrRe coating processed by HVOF
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