# Program of Workshop

**New Methods of Damage and Failure Analysis of Structural Parts**

<table>
<thead>
<tr>
<th>September</th>
<th>Lecture Room B4</th>
<th>Lecture Room B5</th>
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<tr>
<td><strong>Monday 8</strong></td>
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<tr>
<td>8:00-</td>
<td>Registration</td>
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<tr>
<td>9:00-10:00</td>
<td>Opening Ceremony</td>
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<tr>
<td>10:00-10:10</td>
<td>Short Pause</td>
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<tr>
<td>10:10-10:50</td>
<td>Plenary Lecture</td>
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<td>10:50-11:10</td>
<td>Coffee Break</td>
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<tr>
<td>11:10-12:00</td>
<td>Structural Assessment</td>
<td>Mechanical Loading and Performance</td>
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<tr>
<td>12:00-13:00</td>
<td>Lunch</td>
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<tr>
<td>13:00-14:40</td>
<td>Testing Methodologies</td>
<td>Bonding-1</td>
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<tr>
<td>14:40-15:05</td>
<td>Coffee Break</td>
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<tr>
<td>15:05-16:45</td>
<td>Toughness and Plastic Collapse</td>
<td>Bonding-2</td>
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<tr>
<td>16:45-16:55</td>
<td>Announcement</td>
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<td><strong>Tuesday 9</strong></td>
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<tr>
<td>9:00-10:15</td>
<td>Mechanical Behavior-1</td>
<td>Diffusion and Precipitation</td>
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<td>10:15-10:35</td>
<td>Coffee Break</td>
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<td>10:35-11:50</td>
<td>Mechanical Behavior-2</td>
<td>Damage Monitoring</td>
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<td>12:00-13:00</td>
<td>Lunch</td>
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<td>13:00-14:40</td>
<td>Human and Biomechanics</td>
<td>Nanostructure-1</td>
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<td>14:40-15:05</td>
<td>Coffee Break</td>
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<td>15:05-16:45</td>
<td>Fatigue-1</td>
<td>Nanostructure-2</td>
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<td>16:45-16:55</td>
<td>Announcement</td>
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<td><strong>Wednesday 10</strong></td>
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<tr>
<td>9:00-10:40</td>
<td>Fatigue-2</td>
<td>Nanostructure-3</td>
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<td>10:40-11:05</td>
<td>Coffee Break</td>
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<tr>
<td>11:05-12:20</td>
<td>Fatigue-3</td>
<td>Microstructure Properties and Characterization</td>
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<td>12:20-12:40</td>
<td>Closing Remarks and Announcement</td>
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<td>13:00-14:00</td>
<td>Lunch</td>
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<td><strong>Thursday 11</strong></td>
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<tr>
<td></td>
<td>Meeting in Kutna Hora</td>
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# Program of Workshop

**New Methods of Damage and Failure Analysis of Structural Parts**

September 8 - 11, 2014

VSB – Technical University of Ostrava, Czech Republic

## Monday, September 8th

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>08:00-</td>
<td>Registration</td>
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<tr>
<td>09:00-10:00</td>
<td>Opening Ceremony (Plenary)</td>
<td>B4</td>
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<tr>
<td>10:10-10:50</td>
<td>Invited Lecture, introduced by Prof. Strnadel</td>
<td>B4</td>
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<tr>
<td>10:50-11:10</td>
<td>Coffee Break</td>
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### Lectures

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair</th>
<th>Room</th>
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<tr>
<td>11:10-12:00</td>
<td>Structure Assessment</td>
<td>prof. K. Hasegawa</td>
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<tr>
<td>12:00-13:00</td>
<td>Lunch</td>
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<tr>
<td>13:00-14:40</td>
<td>Testing Methodologies</td>
<td>prof. M. Neslušan</td>
<td>B4</td>
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### Presentations

- **S. VEJVODA, P. RÝŠAVÝ**
  Assessment of Structures Loaded at Creep

- **R. KRAUTSCHNEIDER, L. JOCH**
  Decreasing Thermal Stresses in Steam Generator Collector Weld’s Area Using External Cooling

- **K. MATOCHA, L. KANDER, O. DORAZIL, K. GUAN, YIFEN XU**
  The Evaluation of Actual Material Properties of Low Alloy CrMoV Steel From the Results of Small Punch Tests

- **T. KABURAGI, R. SUZUKI, M. MATSUBARA, T. KOYAMA, T. TASHIRO**
  Improvement of the Herbert Pendulum Hardness Tester
P. DYMÁČEK, F. DOBEŠ, M. JEČMÍNKA
STRESS RELAXATION SMALL PUNCH TESTING OF P92 STEEL

P. HAUŠILD, J. SIEGL, A. MATERNA
ABI TESTING OF REACTOR PRESSURE VESSEL STEEL

14:40-15:05   Coffee Break

15:05-16:45   **Toughness and Plastic Collapse**   Room B4
Chair: prof. T. Ishikawa

M. HABASHI, M. TVRDÝ
RELATIONSHIPS BETWEEN KIC AND CVN AT TEMPERATURES LOWER THAN NDT

R. SUZUKI, M. MATSUBARA, S. YANAGIHARA, M. MORIJIRI, A. OMORI, T. WAKAI
COLLAPSE EVALUATION OF DOUBLE NOTCHED STAINLESS PIPES SUBJECTED TO COMBINED TENSION AND BENDING

K. MASUDA
COLLAPSE MECHANISM OF RECTANGULAR TUBES SUBJECTED TO PURE BENDING

T. WAKAI, H. MACHIDA, M. ARAKAWA, S. YOSHIDA, S. YANAGIHARA, R. SUZUKI, M. MATSUBARA, Y. ENUMA
DEVELOPMENT OF A CRACK OPENING DISPLACEMENT ASSESSMENT PROCEDURE CONSIDERING CHANGE OF COMPLIANCE AT A CRACK PART IN THIN WALL PIPES MADE OF MODIFIED 9CR-1MO STEEL

16:45-16:55   Announcement   Room B4

**Monday, 8th September, Room B5**

11:10-12:00   **Mechanical Loading and Performance**   Room B5
Chair: prof. T. Lagoda

I. DLOUHÝ, Z. CHLUP, H. HADRABA, L. ŘEHOŘEK
RESPONSE OF ALUMINA FOAM TO TENSILE MECHANICAL LOADING INCLUDING STRESS CONCENTRATOR EFFECT

K. USHIJIMA, W.J. CANTWELL, D.H. CHEN
EFFECTS OF INCLUSION ON THE IN-PLANE MECHANICAL PERFORMANCE OF MICRO-LATTICE PLATE
12:00-13:00  **Lunch**

13:00-14:40  **Bonding-1**  
Chair: prof. J. Sojka

**X. MA, S. KOYAMA**  
EFFECT OF SURFACE MODIFICATION BY AQUEOUS NAOH SOLUTION ON BOND STRENGTH OF A5052 ALUMINUM ALLOY/AL AND CU/AL

**S. KOYAMA, N. HAGIWARA, I. SHOHJI**  
DIRECT BONDING OF CU/CU BY METAL SALT GENERATION BONDING TECHNIQUE WITH FORMIC ACID AND ACETIC ACID

**M. HASEGAWA, S. YAMAOKA**  
DELAMINATION PROPERTY OF MODELLED AIR PLASMA SPRAYED THERMA BARRIEAR COATINGS: EFFECT OF DIFFERENCE IN CHEMICAL COMPOSITION OF BOND COAT

14:40-15:05  **Coffee Break**

15:05-16:45  **Bonding-2**  
Chair: prof. K. Takashima

**O. HONDA, Q. YU**  
STUDY ON RELIABILITY EVALUATION METHOD OF ADHESION STRENGTH OF RESIN

**T. AKIYAMA, S. KOYAMA**  
DIRECT BONDING OF TI/AL BY METAL SALT GENERATION BONDING TECHNIQUE WITH FORMIC ACID

**T. TSUNETO, S. KOYAMA**  
DIRECT BONDING OF SUS304 STAINLESS STEEL BY METAL SALT GENERATION BONDING TECHNIQUE WITH FORMIC ACID

**Y. TOMIKAWA, S. KOYAMA**  
DIRECT BONDING OF A6061 ALUMINUM ALLOY BY METAL SALT GENERATION BONDING TECHNIQUE WITH FORMIC ACID

16:45-16:55  **Announcement**
Tuesday, 9th September, Room B4

09:00-10:15  **Mechanical Behavior-1**  Room B4
Chair: prof. J. Siegl

S. LASEK, V. ČÍHAL, M. BLAHETOVÁ, E. KALABISOVÁ
RESISTANCE TO CORROSION CRACKING OF STEEL 100Cr6 IN HUMID AIR UNDER HIGHER TENSILE STRESSES

M. ŠTAMBORSKÁ, M. LOSERTOVÁ, K. KONEČNÁ, V. MAREŠ, L. HORSÁK, R. GALACZ
COMPARATIVE STRAIN ANALYSIS OF 34CrMo4 STEEL AND INCONEL 738LC

I. MIKA
EXTRA HIGH STRENGTH STEEL PLATES. PRODUCTION, POSSIBILITIES AND LIMITS

10:15-10:35  **Coffee Break**

10:35-11:50  **Mechanical Behavior-2**  Room B4
Chair: prof. P. Haušild

H. MORITA, Q. YU
PRECISION EVALUATION FOR REALIABILITY OF POWER MODULE USING COUPLED ELECTRICAL-THERMAL-MECHANICAL-ANALYSIS

M. KIKUCHI, R. SERIZAWA, S. YAMADA
INTERNAL CRACK GROWTH SIMULATION USING S-VERSION FEM

K. HASEGAWA, Y. LI, R. SERIZAWA, M. KIKUCHI
PROPOSAL OF PROXIMITY RULE ON TRANSFORMATION FROM SUBSURFACE TO SURFACE FLAW

12:00-13:00  **Lunch**

13:00-14:40  **Human and Biomechanics**  Room B4
Chair prof. M. Kikuchi

R. ČADA, K. FRYDRÝŠEK
BIOMECHANICS – PROBLEMATIC LOOSENING OF LOCKING SCREWS FROM PLATES

K. FRYDRÝŠEK
BIOMECHANICS - PROBABILISTIC RELIABILITY ASSESSMENT OF FEMORAL SCREWS
Y. ZAMA
FINITE ELEMENT HUMAN MODEL FOR CRASH SAFETY ASSESSMENT OF AUTOMOBILE IN FRONTAL COLLISION

G. THEISZ, K. FRYDRÝŠEK
BIOMECHANICS – SAFETY FACTOR EVALUATION OF ANTEROLATERAL PLATES FOR DISTAL TIBIA FRACTURES

14:40-15:05 Coffee Break

15:05-16:45 Fatigue-1 Room B4
Chair: prof. T. Shibutani

L. VLČEK
THE CURRENT STATUS OF NEW CZECH CORROSION FATIGUE EVALUATION PROPOSAL FOR WWER NUCLEAR POWER PLANTS

T. ISHIKAWA, K. HAYASHI
APPLICATION OF ULTRASONIC IMPACT TREATMENT (UIT) FOR IMPROVEMENT OF FATIGUE LIFE

R. FAJKOŠ, T. TKÁČ
EFFECT OF SURFACE QUALITY OF MACHINED RAILWAY WHEELS ON FATIGUE STRENGTH

K. MIZOBE, R. SEGAWA, T. SHIBUKAWA, K. KIDA
EFFECT OF REPEATED HEATING ON ONE-POINT ROLLING CONTACT FATIGUE OF HIGH-CARBON HIGH-CHROMIUM STEEL BAR

16:45-16:55 Announcement Room B4

Tuesday, 9th September, Room B5

09:00-10:15 Diffusion and Precipitation Room B5
Chair: prof. V. Vodárek

J. SOJKA, P. VÁŇOVÁ, V. VODÁREK, M. SOZANSKA
DIFFUSION OF HYDROGEN IN THE TRIP 800 STEEL

K. NAKANE, H. MAHARA, K. KIDA
IMAGE ANALYSIS VIA REACTION DIFFUSION SYSTEM FOR EDGE DETECTION

V. VODÁREK, A. VOLODARSKAJA, Š. MIKLUŠOVÁ, J. HOLEŠINSKÝ, O. ŽÁČEK
PRECIPITATION REACTIONS IN A COPPER - BEARING GOES
10:15-10:35  Coffee Break

10:35-11:50  Damage Monitoring  
            Room B5
            Chair: prof. M. Matsubara

M. ČILLIKOVÁ, B. MIČIETA, M. NESLUŠAN, D. BLAŽEK
NONDESTRUCTIVE MAGNETIC MONITORING OF GRINDING DAMAGE

K.KIDA, M. ISHIDA, K. MIZOBE
OBSERVATION OF MAGNETIC FIELDS AROUND PLASTIC DEFORMATION AREA IN LOW
CARBON ALLOY STEEL

A. MIČIETOVÁ, J. PIŠTORA, Z. DURSTOVÁ, M. NESLUŠAN
CONCEPT OF DAMAGE MONITORING AFTER GRINDING FOR COMPONENTS OF VARIABLE
HARDNESS

12:00-13:00  Lunch

13:00-14:40  Nanostructure-1  
             Room B5
             Chair: prof. J. Pištora

K. ČECH BARABASZOVÁ, G. SIMHA MARTYNYKOVÁ
CHARACTERIZATION OF VERMICULITE PARTICLES AFTER MECHANICAL TREATMENT

L. HALAGAČKA, K. POSTAVA, M. VANWOLLEGHEM, B. DAGENS, J. BEN YOUSSEF,
AND J. PIŠTOTRA
ADVANCED NUMERICAL MODELLING METHODS FOR 1D PERIODIC PLASMONIC
STRUCTURE SIMMULATIONS

D. HLAVÁČ, J. TOKARSKÝ
MOLECULAR MODELING OF ANTIMICROBIAL NANOCOMPOSITES

S. HOLEšOVÁ, M. HUNDÁKOVÁ, E. PAZDZIORA
ANTIMICROBIAL KAOLINITE BASED NANOCOMPOSITES

14:40-15:05  Coffee Break

15:05-16:45  Nanostructure-2  
             Room B5
             Chair: prof. G. S. Martynkova

G. SIMHA MARTYNYKOVÁ, D. PLACHÁ, L. ROZUMOVÁ, E. PLEVOVÁ
VOLATILE ORGANIC MOLECULES SORPTION ONTO CARBON NANOTUBES
Z. MRÁZKOVÁ, K. POSTAVA, A. TORRES-RIOS, M. FOLDyna, P. ROCA I CABARROCAS, V. VODÁREK, J. HOLEŠÍNSKÝ, AND J. PIŠTORA
OPTICAL MODELLING OF MICROCRYSTALLINE SILICON DEPOSITED BY PLASMA-ENHANCED CHEMICAL VAPOUR DEPOSITION ON LOW-COST IRON-NICKEL SUBSTRATE FOR PHOTO-VOLTAIC APPLICATIONS

L. PAZOURKOVÁ, G. SIMHA MARTYNKOVÁ, M. HUNDÁKOVÁ, M. VALÁŠKOVÁ
SUBMICRON CALCIUM PHOSPHATE PARTICLES STUDY ANCHORED ON CLAY SUPPORTS

D. PLACHÁ, T. SOSNA, E. VACULÍKOVÁ, M. MIKESKA, R. DVORSKÝ
PREPARATION OF SUBMICRON PARTICLES OF BIOLOGICALLY ACTIVE SUBSTANCES USING SUPERCritical FLUIDS

16:45-16:55 Announcement Room B4

Wednesday, 10th September, Room B4

09:00-10:40 Fatigue-2 Room B4
Chair: prof. O. Umezawa

M. ŠOFER, R. FAJKOŠ, R. HALAMA
INFLUENCE OF INDUCTIVE HARDENING ON WEAR RESISTANCE IN CASE OF ROLLING CONTACT

T. SHIBUTANI, N. KASAI, H. KOBAYASHI, H. AKATSUKA, T. TAKAHASHI, T. YAMADA
STATISTICAL ANALYSIS OF ACCIDENTS DUE TO FATIGUE AND CORROSION AT FACILITIES PRODUCING HIGH PRESSURE GAS

R. HALAMA, A. MARKOPOULOS, M. ŠOFER, P. MATUŠEK
CYCLIC PLASTIC PROPERTIES OF CLASS C STEEL INCLUDING RATCHETING: TESTING AND MODELLING

H. IKEYA, H. FUKUTOMI
CYCLIC BENDING DEFORMATION AND FRACTURE OF AL AND AL-1.0MASS%MG ALLOY

10:40-11:05 Coffee Break

11:05-12:20 Fatigue-3 Room B4
Chair: prof. H. Fukutomi

M. KUREK, T. ŁAGODA
INCLUDING OF RATIO OF FATIGUE LIMITS FROM BENDING AND TORSION FOR ESTIMATION FATIGUE LIFE UNDER CYCLIC LOADING
O. UMEZAWA, M. HAMADA, T. TATSUMI
EVALUATION OF FATIGUE CRACK GROWTH IN ALPHA TITANIUM ALLOYS

A. KAROLCZUK, T. ŁAGODA
CYCLIC INSTABILITY OF STEEL-TITANIUM BIMETALLIC COMPOSITE OBTAINED BY EXPLOSIVE WELDING

12:20-12:40 Closing and Remarks Announcement Room B4

13:00-14:00 Lunch

Wednesday, 10th September, Room B5

09:00-10:40 Nanostructure-3 Room B5
Chair: prof. I. Dlouhý

K. YODEN, Y. SAIITO, Q. YU
INFLUENCE OF VOID ON THE MECHANICAL PROPERTY OF NANOMATERIAL

L. ROZUMOVÁ, G. SIMHA MARTYNKOVÁ
PREPARATION OF CARBON NANO FILLERS FOR METALIC COMPOSITES

J. SEIDLEROVÁ, M. SAFARIKOVA, L. ROZUMOVÁ, I. SAFARIK, O. MOTYKA
TIO₂ – BASED SORBENT FOR LEAD IONS REMOVAL

J. VLČEK, M. LESŇÁK, P. OTIPKA
MAGNETO-PLASMONIC PROPERTIES OF AU/FE/AU PLANAR NANOSTRUCTURES: THEORY AND EXPERIMENTS

10:40-11:05 Coffee Break

11:05-12:20 Microstructure Properties and Characterization Room B5
Chair: prof. Y. Zama

M. TOKARČÍKOVÁ, K. MAMULOVÁ KUTLÁKOVÁ, J. SEIDLEROVÁ
PROPERTIES OF KAOLINITE TREATED BY DIFFERENT TEMPERATURES

V. ŠEFL, R. NOVÁKOVÁ, J. BYSTRIANSKÝ
CHARACTERIZATION OF HETEROGENEOUS WELDMENTS
K. POSTAVA, R. SYKORA, D. LEGUT, J. PISTORA
DETERMINATION OF ANISOTROPIC CRYSTAL OPTICAL PROPERTIES USING MUELLER MATRIX SPECTROSCOPIC ELLIPSOmetry

12:20-12:40  Closing Remarks and Announcement  Room B4
13:00-14:00  Lunch