

Thursday (18 th September)	Friday (19 th September)		Saturday (20 th September)	
Registration 17:00 – 19:00	8:30 – 9:00	Opening		
	9:00 – 9:30	Sándor Kéki	9:00 – 10:30	Section's lectures
	9:30 – 11:30	Poster session	10:30 – 11:00	Coffee break
	12:00 – 13:00	Lunch	11:00 – 13:00	Section's lectures
	13:00 – 14:30	Section's lectures	13:00 – 14:00	Lunch
	14:30 – 15:00	Coffee break		
	15:00 – 17:30	Section's lectures		
Get-together party 19:00 – 22:00	19:00 – 22:00	Banquet		

PROGRAMME

Thursday, 18th September

17:00 – 19:00 *Registration* *Centrum Hotel*

19:00 – 22:00 *Get-together party* *Centrum Hotel*

Friday, 19th September

Registration desk is open from 8:00.

Place: Life Science Building; Room – Lecture Hall 3.-4.

Chair: Dezső Beke

8:30 – 9:00 **Opening, Welcome**

9:00 – 9:30 **Sándor Kéki** (University of Debrecen, Hungary)
TÁMOP project - Smart functional materials

9:30 – 11:30 **Poster session**

The poster session is located in the gallery of the Life Science Building and accessible during the whole conference. Posters should be on display until the end of the conference.

12:00 – 13:00 **Lunch** *Life Science Building's gallery*

13:00 – 14:30 **Section's lectures**

14:30 – 15:00 *Coffee Break* *Life Science Building's gallery*

15:00 – 17:30 **Section's lectures**

19:00 – 22:00 *Banquet* *Grand Hotel Aranybika*

Section 1: Statistical aspects of deformation and fracture - avalanches and intermittency in non-equilibrium systems

Coordinator: Ferenc Kun

Place: Life Science Building; Room – 3.402 (3rd floor)

Chair: Ferenc Kun

13:00 – 13:30 **Antoni Planes** (Universitat de Barcelona, Spain): *Avalanche criticality in martensitic transitions. An acoustic emission study*

13:30 – 14:00 **Gianfranco Durin** (Istituto Nazionale di Ricerca Metrologica, Torino, Italy): *Universality in the magnetization dynamics in soft ferromagnets*

14:00 – 14:30 **Péter Ispánovity** (Eötvös University, Budapest, Hungary): *Scale-free dynamics in dislocation systems*

14:30 – 15:00 **Coffee Break** *Life Science Building's gallery*

Chair: Antoni Planes

15:00 – 15:30 **Eduard Vives** (Universitat de Barcelona, Spain): *Compression of porous materials: statistical aspects of labquakes*

15:30 – 16:00 **Ferenc Kun** (University of Debrecen, Hungary): *Discrete element modelling of rupture cascades during the compression of porous rocks*

16:00 – 16:30 **Osvanny Ramos** (ILM, University Lyon 1, France): *Non-trivial accelerations in subcritical crack growth*

16:30 – 17:00 **Zsuzsa Danku** (University of Debrecen, Hungary): *Crackling noise in a fiber bundle model of creep rupture*

17:00 – 17:30 **Naoki Yoshioka** (The University of Tokyo, Japan): *Kinetic Monte Carlo algorithm for thermally induced breakdown of fiber bundles*

Section 2: Quantum mechanical study of molecules and solids

Coordinator: Ágnes Nagy

Place: Life Science Building; Room – F.102 (ground floor)

Chair: Nagy Ágnes

13:00 – 13:30 **Mel Levy** (Department of Chemistry, Duke University, Durham, North Carolina, USA):
On variational principles in ground-state density functional theory

13:30 – 14:00 **Levente Vitos** (KTH, Stockholm, Sweden):
Efficient DFT solver for alloys

14:00 – 14:30 **Kalevi Kokko** (University of Turku, Finland):
Quasi-non-uniform gradient-level exchange-correlation approximation

14:30 – 15:00 **Coffee Break** *Life Science Building's gallery*

Chair: Zsolt Gulácsi

15:00 – 15:30 **Johannes Richter** (Universitaet Magdeburg, Germany): *Frustrated quantum magnetism*

15:30 – 16:00 **Zhidong Zhang** (Chinese Academy of Sciences, Shenyang, Shenyang, China):
Topological and algebraic approaches on the 3D Ising model

16:00 – 16:30 **Stephan Schönecker** (KTH, Stockholm, Sweden):
Thermal surface free energy and stress of Fe

16:30 – 17:00 **Miklós Gulácsi** (University of Canberra, Australia):
One-dimensional Anderson lattice at partial band filling

Section 3: Atomic transport in thin films, multilayers and nanoparticles

Coordinator: Zoltán Erdélyi

Place: Life Science Building; Room – F.402 (ground floor)

Chair: Zoltán Erdélyi

13:00 – 13:30 **Guido Schmitz** (University of Stuttgart, Germany):
Ionic transport and function of thin film battery materials

13:30 – 14:00 **Christophe Girardeaux** (Aix-Marseille University - IM2NP, Marseille, France):
Phase formation of germanides during Mn thin film reaction with Ge: a structural, magnetic and diffusion study

14:00 – 14:30 **Manfred Albrecht** (University of Augsburg, Germany): *Amorphous ferrimagnetic Tb-Fe thin films: Coupling phenomena and all-optical helicity dependent magnetic switching*

14:30 – 15:00 **Coffee Break** *Life Science Building's gallery*

Chair: Guido Schmitz

15:00 – 15:30 **Eugen Rabkin** (Technion - Israel Institute of Technology, Haifa, Israel):
The kinetics of hollowing of Ag-Au core-shell nanowhiskers and nanoparticles controlled by short-circuit diffusion

15:30 – 16:00 **Zoltan Balogh** (University of Stuttgart, Germany):
Atomic transport on the nanoscale within and far away from diffusion shortcuts

16:00 – 16:30 **Zoltán Erdélyi** (University of Debrecen, Hungary):
Reactive diffusion on the nanoscale: phase nucleation and growth in sharp concentration gradient

- 16:30 – 17:00** **Bence Parditka** (University of Debrecen, Hungary): *Phase growth of Cu_3Si : combination of analytical techniques*
- 17:00 – 17:30** **Leonid Klinger** (Technion - Israel Institute of Technology, Haifa, Israel): *Mass-conserving growth of metal nanowires*

Section 4: Multifunctional metallic and smart polymeric materials

Coordinator: József Karger-Kocsis

Place: Life Science Building; Room – Lecture Hall 3.-4.

Chair: Rudolf Faust

13:00 – 13:30 **Muhammad Yasar Razzaq** (Helmholtz-Zentrum Geesthacht, Teltow, Germany):
Internal structuring on different length scales as powerful tool for creating shape-memory functions in polymer based materials

13:30 – 14:00 **József Karger-Kocsis** (MTA–BME Research Group, Budapest, Hungary):
Shape memory performance of epoxy resin-based composites

14:00 – 14:30 **Jukka Seppälä** (Aalto University, Espoo, Finland):
Synthesis of smart and functional biopolymers

14:30 – 15:00 **Coffee Break** *Life Science Building's gallery*

Chair: Jukka Seppälä

15:00 – 15:30 **József Karger-Kocsis** (MTA–BME Research Group, Budapest, Hungary): *Smart interphase in polymer composites: recent advancements*

15:30 – 16:00 **Miklós Zrinyi** (Semmelweis University, Budapest, Hungary):
Colloidal particles that make polymers smart

16:00 – 16:30 **Ming Qiu Zhang** (Materials Science Institute, Sun Yat-sen University, Guangzhou, China):
Self-healing thermoplastic polymer based on multilayered microcapsule strategy

16:30 – 17:00 **Min Zhi Rong** (Materials Science Institute, Sun Yat-sen University, Guangzhou, China):
Intrinsic self-healing of polymer materials based on dynamically reversible covalent bonds

17:00 – 17:30 **Rudolf Faust** (University of Massachusetts Lowell,
Massachusetts, USA):
Smart, self-healing coatings

Section 5: Amorphous materials for photonics technologies

Coordinator: Sándor Kökényesi

Place: Life Science Building; Room – 1.035 (1st floor)

Chair: Sándor Kökényesi

13:00 – 13:30 **Sándor Kökényesi** (University of Debrecen, Hungary): *Light-sensitive chalcogenides for optical recording*

13:30 – 14:00 **Hanno Volker** (RWTH Aachen University, Aachen, Germany): *Control on the nanoscale: Lessons to learn from phase change materials*

14:00 – 14:30 **Angela Seddon** (University of Nottingham, England): *Mid-infrared photonics: a hot topic!*

14:30 – 15:00 **Coffee Break** *Life Science Building's gallery*

Chair: Ihor Studenyak

15:00 – 15:30 **Andriy Dmytruk** (Institute of Physics of NAS of Ukraine, Kyiv, Ukraine): *Atomic clusters of CdSe, ZnO, SiI, GeI: preparation, characterization, modelling*

15:30 – 16:00 **Mária Csete** (Department of Optics and Quantum Electronics, Szeged, Hungary): *Plasmonically enhanced light-matter interaction*

16:00 – 16:30 **Igor Denisyuk** (ITMO University, Saint Petersburg, Russia): *Polymer nanocomposites for photonic applications*

16:30 – 17:00 **Pál Koppa** (Budapest University of Technology and Economics, Budapest, Hungary): *Modelling the optical properties of amorphous materials*

Saturday, 20th September

9:00 – 10:30 **Section's lectures**

10:30 – 11:00 *Coffee Break* *Life Science Building's gallery*

11:00 – 13:00 **Section's lectures**

13:00 – 14:00 **Lunch** *Life Science Building's gallery*

Section 1: Statistical aspects of deformation and fracture -
avalanches and intermittency in non-equilibrium systems

Coordinator: Ferenc Kun

Place: Life Science Building; Room – 3.402 (3rd floor)

Chair: Akio Nakahara

9:00 – 9:30 **Nobuyasu Ito** (The University of Tokyo, Japan):
Simulation study of liquid-gas transition

9:30 – 10:00 **Djordje Spasojević** (University of Belgrade, Serbia):
*Extreme events statistics in two-dimensional random
field Ising model*

10:00 – 10:30 **Lajos Daróczy** (University of Debrecen, Hungary):
*Statistical analysis of magnetic noises generated by
cyclic deformation of martensite in Ni₂MnGa single
crystalline shape memory alloys*

10:30 – 11:00 **Coffee Break** *Life Science Building's gallery*

Chair: Eduard Vives

11:00 – 11:30 **Akio Nakahara** (Nihon University, Funabashi,
Japan): *Memory effect of clay paste and its application
to control desiccation crack patterns*

11:30 – 12:00 **Falk Wittel** (ETH Zurich, Computational Physics for
Engineering Materials, Zurich, Switzerland):
*Smart as wood – New perspectives on a natural smart
material*

12:00 – 12:30 **Csaba Takács** (Bay Zoltán Nonprofit Ltd. for Applied
Research): *Magnetic emission test to determine the
dynamic fracture properties of structural steel*

12:30 – 13:00 **István Szabó** (University of Debrecen, Hungary):
*Effect of anisotropic microstructure on magnetic
Barkhausen noise in cold rolled low carbon steel*

13:00 – 14:00 **Lunch** *Life Science Building's gallery*

Section 2: Quantum mechanical study of molecules and solids

Coordinator: Ágnes Nagy

Place: Life Science Building; Room – F.102 (ground floor)

Chair: Miklós Gulácsi

9:00 – 9:30 **Peter S. Riseborough** (Temple University, Philadelphia, USA): *A novel phase transition: A candidate order parameter for URu₂Si₂*

9:30 – 10:00 **Marcus Kollar** (Universitaet Augsburg, Germany): *Prethermalization and thermalization in correlated many-body systems*

10:00 – 10:30 **Annette Bussmann-Holder** (Max-Planck-Institute, Stuttgart, Germany): *Evidences of polaron formation in high temperature superconducting copper oxides: phonon renormalization, isotope effects, multiband signatures, NMR and NQR anomalies*

10:30 – 11:00 **Coffee Break** *Life Science Building's gallery*

Chair: Levente Vitos

11:00 – 11:30 **Claudio Amovilli** (University of Pisa, Italy): *Potential energy surfaces with Quantum Monte Carlo*

11:30 – 12:00 **Federico Zahariev** (Iowa State University, Ames, USA): *Time-dependent density functional theory (TDDFT) combined with the effective fragment molecular orbital (EFMO) method*

12:00 – 12:30 **Tamás Gál** (University of Pécs, Hungary): *A new approach to local hardness*

12:30 – 13:00 **Endre Kovács** (University of Miskolc, Hungary): *Exact ground states for strongly correlated nanostructures*

13:00 – 14:00 **Lunch** *Life Science Building's gallery*

Section 3: Atomic transport in thin films, multilayers and

nanoparticles

Coordinator: Zoltán Erdélyi

Place: Life Science Building; Room – F.402 (ground floor)

Chair: Eugen Rabkin

9:00 – 9:30 **Andriy Gusak** (Cherkasy National University, Ukraine): *Phase competition in Ni-Al revisited – interrelation between phase formation sequence and conditions of deposition*

9:30 – 10:00 **Gábor Katona** (University of Debrecen, Hungary): *Diffusion and solid state reaction in FePt thin films at low temperatures*

10:00 – 10:30 **Gábor Erdélyi** (University of Debrecen, Hungary): *Role of short circuit diffusion in nanoscale intermixing of binary thin film couples*

10:30 – 11:00 **Coffee Break** *Life Science Building's gallery*

Chair: Christophe Girardeaux

11:00 – 11:30 **Bernard Aufray** (Aix-Marseille Université, CNRS, France): *Synthesis of silicene layers on metallic substrates: state of the art*

11:30 – 12:00 **Ivo Zizak** (Helmholtz-Zentrum-Berlin, Germany): *Synchrotron radiation methods for layered materials at BESSY II*

12:00 – 12:30 **Kálmán Vad** (Institute for Nuclear Research, Debrecen, Hungary): *The role of surface roughness in sputter depth profiling*

13:00 – 14:00 **Lunch** *Life Science Building's gallery*

Section 4: Multifunctional metallic and smart polymeric materials

Coordinator: József Karger-Kocsis

Place: Life Science Building; Room – Lecture Hall 3.-4.

Chair: József Karger-Kocsis

9:00 – 9:30 **Christian LExcellent** (DMA/FEMTO-st, Besançon, France): *Magnetic shape-memory alloys behavior*

9:30 – 10:00 **Hans-Joachim Radusch** (University of Halle, Germany): *Morphology controlled multiple shape memory behavior of chemically and electron irradiation cross-linked polymer blends*

10:00 – 10:30 **Volodymyr Chernenko** (BCMaterials & Universidad del Pais Vasco, Bilbao, Spain): *Magnetic shape memory materials*

10:30 – 11:00 **Coffee Break** *Life Science Building's gallery*

Chair: Sándor Kéki

11:00 – 11:30 **Valéria Mertinger** (University of Miskolc, Hungary): *Effect of thermomechanical treatments on the martensitic transformations in TRIP/TWIP steels and shape memory alloys*

11:30 – 12:00 **Uwe Klemradt** (RWTH Aachen University, Germany): *Avalanches and non-equilibrium behavior by X-ray Photon Correlation Spectroscopy*

12:00 – 12:30 **Corneliu M. Crăciunescu** ("Politehnica" University of Timisoara, Romania): *Actuation design based on shape memory alloy film-based architectures*

12:30 – 13:00 **Sándor Szabó** (University of Debrecen, Hungary): *Investigation of thermal, magnetic and acoustic emission of Ni_2MnGa*

13:00 – 14:00 **Lunch** *Life Science Building's gallery*

Section 5: Amorphous materials for photonics technologies.

Coordinator: Sándor Kökényesi

Place: Life Science Building; Room – 1.035 (1st floor)

Chair: Andriy Dmytruk

9:00 – 9:30 **Xiang-Hua Zhang** (University of Rennes I, Rennes, France):

Chalcogenide glass ceramics for photocatalysis

9:30 – 10:00 **Igor Dmitruk** (Institute of Physics of NAS of Ukraine, Kyiv, Ukraine):

Interaction of femtosecond laser pulses with optical antennas – noble metal nanoparticles

10:00 – 10:30 **Suzan Fouad** (Ain-Shams University, Cairo, Egypt):

Structure and physical properties of As-Se-Sn chalcogenide glassy system

10:30 – 11:00 **Coffee Break** *Life Science Building's gallery*

Chair: Mária Cséte

11:00 – 11:30 **András Deák** (Research Centre for Natural Sciences, Budapest, Hungary):

Gold nanoparticles: colloid chemistry and applications

11:30 – 12:00 **Ihor Studenyak** (Uzhhorod National University, Ukraine):

Development and studies of new amorphous superionic conductors

12:00 – 12:30 **Ádám Lőrinczi** (National Institute of Materials Physics, Bucharest, Romania):

Photonic arrays based on amorphous Ga₂S₃ and As₂S₃ thin films

13:00 – 14:00 **Lunch** *Life Science Building's gallery*