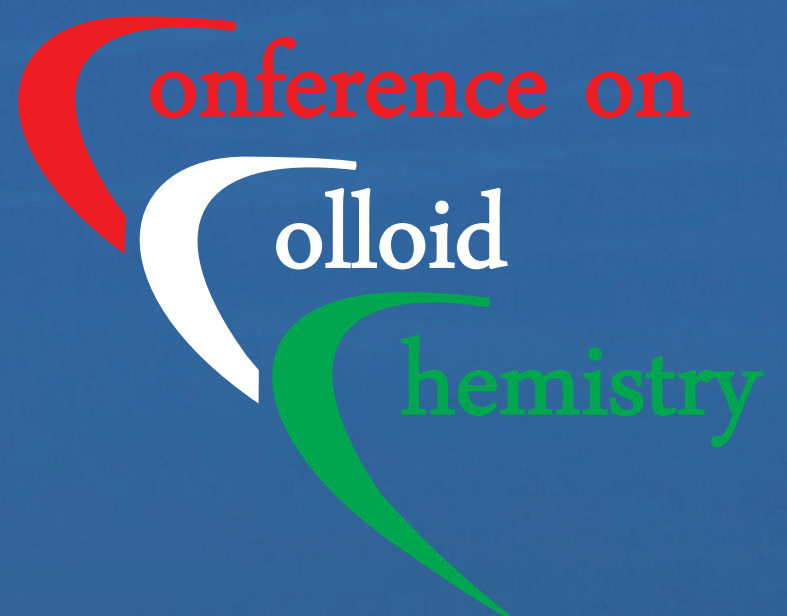


12TH CONFERENCE ON COLLOID CHEMISTRY

12CCC



From fundamentals to sustainable
application

Budapest, Hungary
September 27–30, 2026



HUN
REN



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PROGRAM FINANCED
FROM THE NRDI FUND

Organisers

Division of Colloid Chemistry and
Nanotechnology
Hungarian Chemical Society



Colloid Chemistry Working Committee
Hungarian Academy Of Sciences



Budapest University of
Technology and Economics



Chemistry Division of
Hungarian Society of Natural Sciences



HUN-REN Research Centre for Natural
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Exhibitors

Anton Paar GmbH



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PROGRAM
FINANCED FROM
THE NRDI FUND



PROGRAMME BOOKLET

12TH CONFERENCE ON COLLOID CHEMISTRY

**From fundamentals to
sustainable application**

**Budapest, Hungary
September 27–30, 2026**

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Krisztina László

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Welcome

Dear Colleagues,

Since the early discoveries in the world of colloids colloid and interface science has expanded as an interdisciplinary intersection of branches of chemistry, physics, biology, nanoscience and other fields dealing with colloidal heterogeneous systems. The development of the scientific hardware allowed to go beyond the resolution of the Zsigmondy microscope opening the “nano era” a few decades ago. Thanks to the interdisciplinary nature of the colloid and interface science, the new results have been promptly turned to nanotechnology, leading to the birth of the era of materials science. Colloidal, nanoparticulate, and nano-structured systems and interfaces occupy an important role among the innovative materials that are engineered to promote sustainable development and a liveable future. Colloid particles, novel in size, shape or surface chemistry, offer attractive functional properties for a range of formulated products, from drug delivery systems to coatings and cosmetics. Nanotechnologies provide a wide variety of economic benefits in the field of nanoformulation, sensors, imaging and diagnostics. On the other hand, not all the colloidal systems are benign. Colloid and surface science plays a pivotal role in our fights for a cleaner environment: air and waters, and against global climate change.

The idea of this conference was to bring together experts from different sub-disciplines in academia, industry and business to discuss the scope and recent progress in the field and to promote collaborative efforts.

The organizers of 12th CCC sincerely hope that you will all enjoy stimulating and fruitful days. Since their inception, these conferences have especially welcomed students and young colleagues. Their fresh ideas and questions bring an invaluable contribution to the momentum of scientific discussion.

We thank you all for your participation and also thank our speakers and exhibitors for contributing to the high scientific level of the conference.

Krisztina László
Conference Chair

PROGRAMME

SUNDAY, 27 SEPTEMBER 2026

16:00-18:00 REGISTRATION

18:00-20:00 WELCOME

MONDAY, 28 SEPTEMBER 2026

08:00-09:00 REGISTRATION

09:00-09:30 **OPENING CEREMONY (ROOM A)**

Chair: Krisztina László

Péter Szalay
Miklós Zrínyi

09:30-10:15 **OPENING LECTURE (ROOM A)**

Chair: Krisztina László

Joaquin Silvestre-Albero: Structural flexibility in porous materials upon an external stimulus

10:15-10:45 COFFEE BREAK

ORAL SESSION 1/1 (ROOM A)

Chair: Angéla Jedlovszky-Hajdú

10:45-11:00 **OL01 – Xiangyang Shi:** Multifunctional dendrimer nanogels: a versatile platform for next-generation cancer therapy and immunotherapy

11:00-11:15 **OL02 – Attila Forgács:** Protein based biopolymer aerogels as pH-responsive drug delivery systems

11:15-11:30 **OL03 – Kristóf Molnár:** Investigation of the pH dependent swelling of electrospun hydrogel fiber mats

11:30-11:45 **OL04 – Yong Mei Chen:** Multifunctional self-healing and injectable dynamic nanocomposite hydrogels

11:45-12:00 BREAK

Chair: Attila Forgács

12:00-12:15 **OL05 – Angéla Jedlovszky-Hajdú:** Composite meshes for biomedical applications

12:15-12:30 **OL06 – Mingwu Shen:** Phosphorus dendrimer-based protein delivery systems for osteoarthritis therapy

12:30-12:45 **OL07 – Ami Saito:** Novel antioxidant nanozymes cocktails to combat oxidative stress in IBD

12:45-13:00 **OL08 – Freya Fan:** Introduction of Nanomedicine Therapeutics journal

13:00-14:00 LUNCH BREAK

SPECIAL SESSION IN HONOR OF IMRE DÉKÁNY'S 80TH BIRTHDAY (ROOM A)

Chair: Zoltán Kónya

- 14:00-14:15 **Zoltán Kónya:** Laudation
- 14:15-14:30 **OL09 – Volker Zöllmer:** Functional composites and advanced sensor technologies: honoring the legacy of Prof. Imre Dékány
- 14:30-14:45 **OL10 – Róbert Kun:** From classical colloid chemistry to modern battery science: aqueous heterocoagulation for the assembly of electrochemically active lithium–sulfur cathodes
- 14:45-15:00 **OL11 – G. Julius Vancso:** Nanolignins as pickering emulsifiers in enhanced oil recovery: fresh tricks by an old workhorse
- 15:00-15:15 **OL12 – Sándor Puskás:** Reservoir and formation stimulation by nanoemulsion treatment of the bottom hole zone of oil and gas wells for improved oil recovery
- 15:15-15:30 **OL13 – Davor Kovačević:** From gold nanoparticles to adsorption of arsenic: decades of collaboration in colloid chemistry
- 15:30-15:45 **OL14 – Edit Csapó:** Effect of size reduction on the optical properties of noble metal nanostructures
- 15:45-16:15 COFFEE BREAK

Chair: Róbert Kun

- 16:15-16:30 **OL15 – Tamás Szabó:** Mastering the flat plane: a brief overview of nearly 50 years of research on layer-structured materials in Szeged
- 16:30-16:45 **OL16 – Krisztina László:** Relevance of surface chemistry in performance of nanostructured carbon materials
- 16:45-17:00 **OL17 – Klemen Bohinc:** Factors affecting bacterial adhesion to surfaces
- 17:00-17:15 **OL18 – László Janovák:** Biopolymer-based nanosystems for enhanced drug delivery
- 17:15-17:30 **OL19 – Saule Aidarova:** Surfactant and nanoparticle systems for enhanced foam stability
- 17:30-17:45 **OL20 – István Szilágyi:** Colloidal interactions in nanoplastic-PFAS systems
- 17:45-18:45 **POSTER SESSION**
Chair: Borbála Tegze
- 20:00-22:00 STUDENTS' PARTY (Optional)

TUESDAY, 29 SEPTEMBER 2026

08:00-09:00 REGISTRATION

9:00-9:45 **PLENARY LECTURE (ROOM A)**

Chair: Róbert Mészáros

Juraj Bujdák: Dye–smectite colloids: from fundamentals to photoactive materials

ORAL SESSION 1/2 (ROOM A)

Chair: Benjámín Gyarmati

9:45-10:00 **OL21 – Justyna Gaweł:** Development and optimization of SA-HA hydrogels and PCL-RF scaffolds for potential application in wound healing

10:00-10:15 **OL22 – Karen Contreras Muñoz:** Enzyme responsive fluorinated nanoprobe for OFF/ON ^{19}F MRI detection of MMP 9

10:15-10:30 **OL23 – Attila Cserményi:** Modified lifetime of bioactivity of phototrexate by colloidal molecular environment

10:30-11:00 COFFEE BREAK

ORAL SESSION 2 (ROOM B)

Chair: Mónika Kéri

09:45-10:00 **OL24 – Lucian Baia:** Formation of graphene oxide membranes by self-assembly

10:00-10:15 **OL25 – Nikoletta Kovács:** Development of magnetic adsorbents for broad-spectrum removal of trace micropollutants from real waters

10:15-10:30 **OL26 – John Chagu:** Synthesis and immobilization of $\text{Fe}_3\text{O}_4/\text{Ag}_3\text{PO}_4$ photocatalyst onto ceramic paper for photocatalytic purpose

10:30-11:00 COFFEE BREAK

ORAL SESSION 3/1 (ROOM A)

Chair: Edit Csapó

11:00-11:15 **OL27 – Régis Guegan:** Heterostructures based on the colloidal association of graphene oxide and titanium disulfide nanosheets for possible supercapacitor applications

11:15-11:30 **OL28 – Lilla Nánai:** A brief overview: from the formation of thin films to the production of carbon nanotube forests

11:30-11:45 **OL29 – Hadjra Ben Haoua:** Effect of tri-metallic catalyst on grow carbon nanotube

11:45-12:00 **OL30 – Monica Baia:** Colloidal noble metal nanoparticles as versatile SERS substrates for diverse applications

12:00-12:15 **OL31– Dániel Zámbo:** Multimetallic nanoparticle-based porous nanocatalysts

12:15-12:30 **OL32 – Dániel Simon Berkesi:** Design, standardization, and challenges of visible and UV photocatalytic reactors for nanomaterial testing

12:30-14:45 LUNCH BREAK & **POSTER SESSION** (*Chair: Borbála Tegze*)

ORAL SESSION 4 (ROOM B)

Chair: András Deák

- 11:00-11:15 **OL41 – Mónika Kéri:** Hydration properties of carbon aerogels by NMR relaxation methods
- 11:15-11:30 **OL42 – Szilárd Sáringer:** Characterizing concentrated antibody solutions with small-angle X-ray and light scattering
- 11:30-11:45 **OL43 – László Kiss:** Influence of solvent composition on the electropolymerization of selected organic compounds
- 11:45-12:00 **OL44 – Norbert Nagy:** Capillary bridge probe method for direct measurement of solid-liquid adhesion work
- 12:00-12:15 **OL45– Patrick Swolana (KRÜSS GmbH):** Progress through retraction: industrial insights from two years of easy receding angle measurements
- 12:15-12:30 **OL46– Henrique Brasil (Anton Paar GmbH):** Multiscale light- scattering analysis of thermoresponsive methylcellulose gels
- 12:30-14:45 LUNCH BREAK & **POSTER SESSION** (*Chair: Borbála Tegze*)

ORAL SESSION 3/2 (ROOM A)

Chair: József Kalmár

- 14:45-15:00 **OL33 – Galder Llorente:** Synthesis of fluorinated amphiphilic polymers for the aqueous dispersion of hydrophobic quantum dots, gold nanoparticles, and fluorinated molecules
- 15:00-15:15 **OL34 – Levente Novák:** Functionalized macromolecules as ligands for paramagnetic metal ions
- 15:15-15:30 **OL35 – Ziyoda Ganieva:** Selective Cu₂O shell deposition on gold nanoprisms via ligand-mediated surface engineering
- 15:30-15:45 **OL36 – Bianka Torma:** Noble metal nanoclusters surface-modified with amino acid derivatives
- 15:45-16:15 COFEE BREAK

Chair: Levente Novák

- 16:15-16:30 **OL37 – József Kalmár:** Mechanism of hydration and hydration induced structural changes in polyamide and polyimide aerogels
- 16:30-16:45 **OL38 – Péter Márton:** Tuning the surface properties of chitosan nanocoatings by the self-assembly of cationic surfactant molecules
- 16:45-17:00 **OL39 – Borbála Tegze:** Chitosan-based composite coatings of upconverting NaYF₄: Yb, Tm nanoparticles
- 17:00-17:15 **OL40 – Andrij Pich:** Mechano-responsive colloidal gels
- 19:00-22:00 CONFERENCE DINNER
Törley Visitor Centre

WEDNESDAY, 30 SEPTEMBER 2026

08:00-09:00 REGISTRATION

ORAL SESSION 5 (ROOM A)

Chair: László Kiss

- 09:00-09:15 **OL47 – Paweł Weroński:** Segmentation-free Fourier-based parametrization of particle monolayers from degraded optical microscopy images
- 09:15-09:30 **OL48 – Farshad Hamekhani:** Adsorption-induced fluorescence enhancement of SYBR Green I on saponite dispersions: experimental and computational investigation
- 09:30-09:45 **OL49 – Oldamur Hollóczki:** Nanoplastics from theoretical chemistry
- 09:45-10:00 **OL50 – Maxim Varenicja:** On the interactions between nucleic acids and nanoplastics
- 10:00-10:15 **OL51 – András Deák:** Self-assembly of colloids studied at the single-particle level
- 10:15-10:30 **OL52 – George Kaptay:** Comparison of model equations for size- and shape-dependent integral and partial molar Gibbs energies of nano-phases to find the correct one

10:30-11:00 COFFEE BREAK

ORAL SESSION 6 (ROOM A)

Chair: Szilárd Sáringer

- 11:00-11:15 **OL53 – Róbert Mészáros:** A novel 3D liquid printing technique tested in aqueous two-phase systems
- 11:15-11:30 **OL54 – Csilla Sörös:** Physicochemical characterization and field performance of commercial tank-mix adjuvants in plant protection applications
- 11:30-11:45 **OL55 – Zsófia Árok:** Ion specific effects on the sol-gel behaviour of EOR polymers
- 11:45-12:00 **OL56 – Benjámín Gyarmati:** Study of the interaction between mucin and cationic polymers
- 12:00-12:15 **OL57 – Irena Petrinič:** Surface-modified magnetic nanoparticles as draw solutes in forward osmosis processes
- 12:15-12:30 **OL58 – István Bányai:** *In vivo* NMR relaxation study of human skin: effect of moisturization
- 12:30-13:00 **CLOSING CEREMONY**
Krisztina László
- 13:00-14:00 LUNCH

POSTER SESSION

- P01 – Abelné Terefe Mekuria:** Apparent charge-selectivity reversal under sub-CMC surfactant exposure in polyelectrolyte multilayer nanofiltration membranes
- P02 – Adrienn Márta Bors:** Preparation and investigation of mesoporous TiO₂ sol-gel coatings with enhanced light transmittance and photocatalytic activity
- P03 – Attila Bóta:** Correlation between spectroscopic and stoichiometric protein to lipid ratios in erythrocyte-derived extracellular vesicles and nanoerythrocytes
- P04 – Attila Csicsor:** From humic heterogeneity to standardized fractionation: quantification of humic and fulvic acids by MSZ 1129:2026
- P05 – Attila Vörös:** Dual nanozyme immobilization on latex scaffolds
- P06 – Balázs Borbás:** Development of biopolymer-based composite coatings containing erbium doped upconverting nanoparticles
- P07 – Bence Mihalovics:** Controlling drug release using polyaspartamide-based fibrous matrices
- P08 – Boglárka Szabó:** Building nanoplastic models for molecular calculations
- P09 – Dániel Balázs:** Lead-oleate clusters in nanocrystal synthesis media: reaction, depletion and post-synthetic modification
- P10 – Dániel Pércsi:** Development of aerogel-based sorbents for the selective binding of precious metal compounds
- P11 – Ditta Adrienn Gerbovits:** Investigation of gemini surfactants for enhanced oil recovery applications
- P12 – Domonkos Szabó:** 3D printable porous enzyme support systems
- P13 – Flórián Bencze:** Effect of the protic vs. non-protic molecular environment on the cis to trans conformation change of phototrexate drug
- P14 – Freya Fan:** Introduction of OAE Publishing Inc.
- P15 – Gabriella-Stefánia Szabó:** Study of the anticorrosion properties of silica coatings modified with phytic acid (PA) and 3-glycidyloxypropyltrimethoxysilane (GPTMS) on zinc substrates
- P16 – Kata Szayly:** Toughness-enhanced mucosa-mimetic hydrogels
- P17 – Katharina Wulz:** Viscosity and dynamic surface tension measurement: a guideline for appropriate measurement
- P18 – Kinga Kovács:** Titania and silica thin-film systems exhibiting selective light transmission and water repellency
- P19 – Lilla Garas:** Specific ion effects and underscreening in HPAM solutions for enhanced oil recovery
- P20 – Mykhailo Filep:** Photocatalytic degradation of organic dyes over LaFe_{0.95}Cu_{0.05}O₃ perovskite
- P21 – Mykhailo Filep:** Preparation and characterization of Ag_{7+x}(P_{1-x}Si_x)S₆ nanopowders
- P22 – Petra Csicsor-Kulcsár:** Investigation of the complexation properties of humic acid
- P23 – Petra Demény:** Eco-friendly encapsulated photocatalytic nanoparticles: synthesis and characterization
- P24 – Qais Al-Madanat:** Microplastic removal from power plant make-up water by single- and two-stage microfiltration with a future perspective on forward osmosis membranes
- P25 – Sándor Puskás:** Development, selection and application of surfactant-polymer solutions for enhanced oil recovery (EOR)
- P26 – Şeyma Miray Simav:** Colloid and enzyme-mimicking properties of ceria nanoparticles
- P27 – Zoltán Csoma:** Investigation of cobalt(II) ion adsorption on multi-walled carbon nanotubes
- P28 – Zsófia Ly Nguyen:** Design and study of macroporous polyaspartamide cryogels
- P29 – Zsuzsanna D. Kónya:** Surface modification of clay-based nanozymes to improve enzyme mimicry and colloidal stability

NOTES

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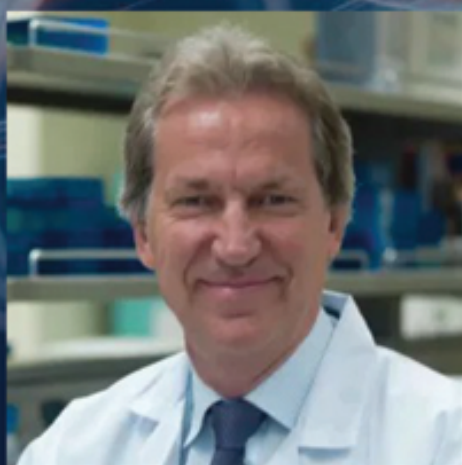
NOTES

WE LOOK FORWARD TO SEEING YOU AT OUR AUTUMN-WINTER
EVENTS IN 2026/27!

31. ŐSZI RADIOKÉMIAI NAPOK

Balatonszárszó, SDG Családi és Konferencia Központ

2026. október 12-14.



Invited lecturer

Christer Halldin

Professor of Medicinal
Radiochemistry

Karolinska Institutet

Department of Clinical Neuroscience
Stockholm, Sweden



Cosmetics Symposium 2026



November 12, 2026
Hamony Hall, ELTE

Eötvös Loránd University
Pázmány Péter Sétány 1/A, 1117 BUDAPEST



HUNGAROCOAT 2026

14th International Exhibition and Conference on Paint Industry



November 24-25, Budapest,
Hungary

Open hours: 9.00-17.00 (admission is free for registered visitors).

LABORTECH EXPO and Analytical Meeting

February 16-17, 2027



