International Conference
"Dynamics of Systems on the Nanoscale"

DySoN 2023

Villa Lanna
Prague, Czech Republic
April 24-26, 2023

SECOND ANNOUNCEMENT

Scope

The Seventh International Conference "Dynamics of Systems on the Nanoscale" (DySoN 2023) will take place on **April 24-26, 2023**, in Villa Lanna, Prague, Czech Republic. The conference is co-organized by the University of Kent (Canterbury, United Kingdom) and MBN Research Center (Frankfurt am Main, Germany).

The DySoN Conference will be followed by the MultIChem 2023 Conference – the 2nd Annual Conference of the COST Action CA20129 "Multiscale Irradiation and Chemistry Driven Processes and Related Technologies" (MultIChem), which will be held on April 26-28 at the same venue. Therefore, the DySoN Conference participants will have a unique opportunity to participate in both events.

DySoN is an interdisciplinary conference series covering a broad range of topics related to the Dynamics of Systems on the Nanoscale. The DySoN conference series was launched in 2010, and six DySoN conferences have been held so far. The DySoN conferences promote the growth and exchange of interdisciplinary scientific information on the structure formation and dynamics of animate and inanimate matter on the nanometer scale. There are many examples of complex many-body systems of micro- and nanometer scale size exhibiting unique features, properties and functions. These systems may have very different nature and origins, e.g. atomic and molecular clusters, nanostructures, ensembles of nanoparticles, nanomaterials, biomolecules, biomolecular and mesoscopic systems. A detailed understanding of the structure and dynamics of these systems on the nanoscale is a difficult and fundamental task, the solution of which is necessary for nano- and biotechnologies, materials science and medicine.

Although mesoscopic, nano- and biomolecular systems differ in their nature and origin, a number of fundamental problems are common to all of them: What are the underlying principles of self-organization and self-assembly of matter at the micro- and nanoscale? Are these principles classical or quantum? How does function emerge at the nano- and mesoscale in systems of different origins? What criteria govern the stability of these systems? How do their properties change as a function of size and composition? How are their properties altered by their environment? Seeking answers to these questions is at the core of a new interdisciplinary field of Meso-Bio-Nano (MBN) Science that lies at the intersection of physics, chemistry and biology.

Experimental, theoretical, computational and applied aspects of the aforementioned problems will be discussed at the DySoN 2023 Conference. Particular attention will be devoted to dynamical phenomena and many-body effects taking place in various MBN systems on the nanoscale. They include problems of structure formation; fusion and fission; collision and fragmentation; surfaces and interfaces; collective electron excitations; reactivity; nanoscale phase and morphological transitions; irradiation-driven transformations of complex molecular systems and biodamage, channeling phenomena, and many more. Links of the DySoN topics to novel and emerging technologies will be an important focus of the conference.

Finally, DySoN 2023 will provide a platform to host discussions about current research, technological challenges and related initiatives within the Topical Areas of the DySoN conference series.

Topical Areas of DySoN:

- Structure and dynamics of molecules, clusters and nanoparticles
- Cluster and biomolecular ensembles, composite systems
- Clustering, self-organization, phase and morphological transitions on the nanoscale
- Nanostructured materials, surfaces and interfaces
- Reactivity and nanocatalysis
- Electron and spin transport in molecular systems
- Collision and radiation processes, fusion, fission, fragmentation
- Radiation-induced chemistry
- Irradiation-driven transformations, damage and fabrication of MesoBioNano systems
- Propagation of particles through media
- Biomedical and technological applications of radiation
- Related technologies: novel light sources, controlled nanofabrication, functionalized materials, etc.

Important Dates

Distribution of the first announcement	November 01, 2022
Distribution of the second announcement	February 01, 2023
Deadline for early-bird registration	March 01, 2023
Deadline for hotel reservation	March 01, 2023
Deadline for abstract submission	April 01, 2023

DySoN 2023 Scientitic Program

Monday, April 24

$08^{00} – 09^{15}$	Participants registration
$09^{15} – 09^{30}$	**DySoN 2023 Opening**
$09^{30} – 11^{00}$	**Morning session I: Structure and dynamics of molecules, clusters and nanoparticles**
$11^{00} – 11^{30}$	Coffee break
$11^{30} – 13^{00}$	**Morning session II: Cluster and biomolecular ensembles, composite systems**
$13^{00} – 14^{30}$	Lunch
$14^{30} – 16^{00}$	**Afternoon session I: Electron and spin transport in molecular systems**
$16^{00} – 16^{30}$	Coffee break
$16^{30} – 18^{00}$	**Afternoon session II: Clustering, self-organization, phase and morphological transitions on the nanoscale**
$19^{00} – 22^{00}$	Welcome reception

Tuesday, April 25

$09^{30} – 11^{00}$	**Morning session I: Nanostructured materials, surfaces and interfaces**
$11^{00} – 11^{30}$	Coffee break
$11^{30} – 13^{00}$	**Morning session II: Reactivity and nanocatalysis**
$13^{00} – 14^{30}$	Lunch
$14^{30} – 16^{00}$	**Afternoon session I: Dynamics and chemistry of molecules in the interstellar medium**
$16^{00} – 16^{30}$	Coffee break
$16^{30} – 18^{30}$	**Afternoon session II: Special session on the occasion of 80th birthday of Professor Jean-Patrick Connerade** Chairs: Nigel Mason, University of Kent, Canterbury, UK & Andrey Solov'yov, MBN Research Center, Frankfurt am Main Germany

Wednesday, April 26

$09^{00} – 10^{30}$	**Morning session I: Propagation of particles through media**
$10^{30} – 11^{00}$	Coffee break
$11^{00} – 12^{30}$	**Morning session II: Design and practical realization of novel gamma-ray crystal-based light sources**
$12^{30} – 12^{45}$	**DySoN 2023 Closing**

Confirmed Speakers

Rodolphe Antoine, Université Claude Bernard Lyon1, France
Reactive oxygen species produced upon photoexcitation of monolayer protected noble metal clusters. From in silico to in vitro

Ilko Bald, University of Potsdam, Germany
Hybrid nanostructures for sensitive surface-enhanced Raman scattering and plasmonic chemistry

Milos Baljozovic, Swansea University, United Kingdom
Imaging neuromorphic dynamics of percolating nanocluster networks

Laura Bandiera, Istituto Nazionale di Fisica Nucleare, Ferrara, Italy
Channeling radiation experiments with multi-GeV electron and positron beams: recent results and future perspectives

Wolfgang Ernst, Graz University of Technology, Austria
Mixed-metal nanoparticles – core-shell structures, phase transitions and alloying

Felipe Fantuzzi, University of Kent, Canterbury, United Kingdom
Exploring structural transitions in graphene and lithium fluoride nanostructures: From reactive molecular dynamics to DFT calculations

David Field, Aarhus University, Denmark
The challenge of the spontelectric state

Luca Gerhards, Carl von Ossietzky University, Oldenburg, Germany
Spin dynamics and spin relaxation in biological systems – Introducing MolSpin as versatile toolkit

Franco Gianturco, University of Innsbruck, Austria
Dynamics energy flow in trapped molecular ions of astrophysical interest: Anions and cations in the interstellar medium

Vincenzo Guidi, University of Ferrara, Italy
TBA

Marc Benjamin Hahn, Bundesanstalt für Materialforschung und -prüfung, Berlin, Germany
The change of DNA and radiation damage upon hydration: In-situ observations by near-ambient-pressure XPS

Michael Hausmann, University of Heidelberg, Germany
Functionally determined spatial organization of receptors and proteins integrated in bi-lipid membranes of cells

Liv Hornekær, Interdisciplinary Nanoscience Center, Aarhus University, Denmark
TBA

Julius Jellinek, Argonne National Laboratory, USA
Universality in size-driven evolution towards bulk polarizability of metals

Shiv Khanna, Virginia Commonwealth University, USA
Stable metal-chalcogenide clusters for nano p- n- junction with tunable band gaps, adjustable band alignment, light harvesting and CO_2 activation

Andrei Korol & Andrey V. Solov'yov, MBN Research Center, Frankfurt am Main, Germany
Horizon Europe EIC-Pathfinder Project "Emerging technologies for crystal-based gamma-ray light sources"

Werner Lauth, Institute of Nuclear Physics, University of Mainz, Germany
Development of a positron beamline for channeling experiments at MAMI

Dmitry Momotenko, Carl von Ossietzky University, Oldenburg, Germany
Electrochemical nanotechnology: 3D printing of metals at the nanoscale

Nektarios Papadogiannis, Hellenic Mediterranean University, Heraklion, Greece
Progress on acoustically-induced dynamic structural modulation of monocrystals for CLS applications

Theodoros Pavloudis, Swansea University, United Kingdom
Multiscale modeling of Au-C nanostructured systems: Nanoparticle shapes and neuromorphic dynamics

Davide de Salvador, University of Padova, Italy
Pulsed laser melting for crystals bending

Robin Schürmann, Physikalisch-Technische Bundesanstalt (PTB), Berlin, Germany
Elucidating chemical reactions on nanoparticles by synchrotron X-ray-techniques

Andrey Solov'yov, MBN Research Center, Frankfurt am Main, Germany
Reactive and irradiation driven molecular dynamics research breakthroughs with MBN Explorer

Béla Sulik, Atomki Institute for Nuclear Research, Debrecen, Hungary
Charged particle impact experiments on astrophysical ice analogues

Eric Suraud, Laboratoire de Physique Théorique, Université de Toulouse, France
(Un)expected behaviors of small molecules after ultrafast (XUV) irradiation

Andrew Wheatley, University of Cambridge, United Kingdom
Dual control of morphology and composition in heterobimetallic catalysts for oxygen reduction

Special session on the occasion of 80th birthday of Professor Jean-Patrick Connerade:

Aslam Baig, National Centre for Physics, Quaid-i-Azam University, Islamabad, Pakistan
Work at Imperial College, Bonn University, and Islamabad

Stephen Hogan, Department of Physics and Astronomy, University College London, United Kingdom
TBA

Jean-Pierre Lehmann, Kastler-Brossel Laboratory, Ecole Normale Supérieure, Paris, France & **Michel Broyer**, Université Claude Bernard, Lyon, France
TBA

Mike Mansfield, Physics Department, University College Cork, Ireland
Atomic Giant Resonances: experiments in Frascati and Bonn

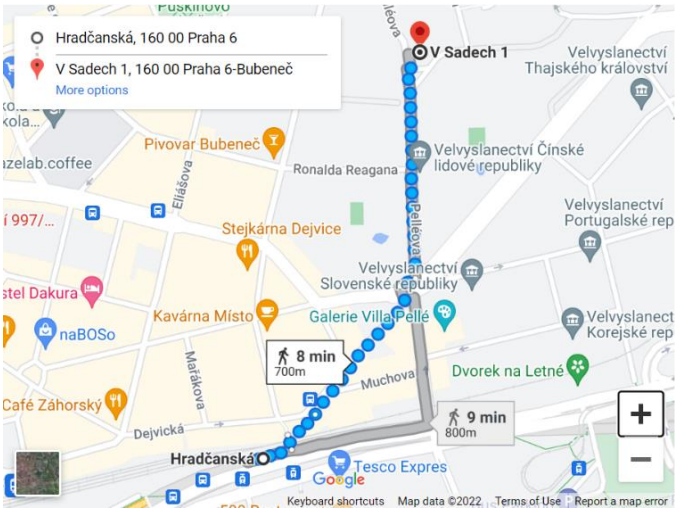
John Marangos, Physics Department, Imperial College London, United Kingdom
Dynamics of Molecular Photoionisation

Chris Mayhew, Institut für Atemgasanalytik, Universität Innsbruck, Austria
J P Connerade: "the Atomic Physicist or there and back again" (with due credit to JRR Tolkien)

George Philip, India
The Laser Laboratory at the University of Kuwait

Conference Venue and Travel Information

DySoN 2023 will be held in Vila Lanna (V Sadech 1, 160 00 Prague 6), the conference center of the Czech Academy of Sciences located in Prague. The conference venue is located within the walking distance from the metro station Hradčanská (Prague metro line A).



The conference venue is well connected with Prague public transport. For more information, please visit the Prague public transport website: https://www.dpp.cz/en.

Detailed information on how to reach the conference venue will be circulated with the final announcement.

Registration

The **early-bird** participation fee for the DySoN 2023 conference is **300 €** for regular participants and **250 €** for undergraduate and PhD students. After the early bird registration deadline of **March 01, 2023**, the conference fee will amount **400 €** for regular participants and **350 €** for undergraduate and PhD students.

	Early-bird fee (before March 01, 2023)	**Late fee (after March 01, 2023)**
Regular participants	300 €	400 €
PhD students	250 €	350 €

The registration fee includes access to the conference hall, poster session, coffee breaks, lunches, and the book of abstracts.

The payment to the order of "DySoN 2023" can be made **by bank transfer** to

Bank Account Name: MBN Research Center gGmbH
Bank name: Deutsche Bank
Branch Address: Hauptstr. 561462 Koenigstein Germany
IBAN: DE15500700240137588000
BIC: DEUTDEDBFRA

Please quote your **NAME** and **DySoN** on the transfer. Please ensure there are NO charges to us. If you need an invoice for the payment or want to pay with a credit card, please send a short email to dyson.conference@gmail.com.

Accommodation

Accommodation in 27 rooms is possible directly in the Villa Lanna. Conference participants can book accommodation directly with the Villa Lanna at recepce@vila-lanna.cz and quote "DySoN". The rooms will be reserved until March 01, 2023 and will then be released, so please book early.

Alternative options for accommodation:
There are a number of hotels, B&Bs, and apartments within walking distance of the meeting venue. These lodging options can be booked via booking.com or airbnb.com.

Abstract Submission

Abstracts should be submitted electronically not later than April 01, 2023. Please send your abstracts to dyson.conference@gmail.com with the title "DySoN 2023 Abstract".

The abstracts are to be supplied by the authors typewritten in camera-ready form in A4 format. The length of the abstract should not exceed two pages. The abstract template with more detailed preparation guidelines is available for downloading here.

Please note that we accept files in the MS Word document (.docx) format.

Official Invitation and Visa

Conference participants are advised to check the visa requirements for travel to Czech Republic.

Conference Language

The language of the conference is English.

DySoN 2023 Proceedings

We plan to publish proceedings of the DySoN 2023 Conference, and all conference participants are encouraged to contribute. Further information regarding the proceedings will be distributed with the DySoN 2023 Final Announcement and added to the conference website.

DySoN International Advisory Committee

- Andrey V. Solov'yov (MBN Research Center, Frankfurt am Main, Germany) **- Chair**
- Ilko Bald (University of Potsdam, Germany)
- Catherine Bréchignac (Laboratoire Aime Cotton, CNRS, Orsay, France)
- Michel Broyer (University of Lyon, France)
- Jean-Patrick Connerade (Imperial College London, London, UK)
- Franco Gianturco (The University of Innsbruck, Austria)
- Vincenzo Guidi (University of Ferrara, Italy)
- Julius Jellinek (Argonne National Laboratory, Argonne, Illinois, USA)
- Shiv Khanna (Virginia Commonwealth University, Richmond, USA)
- Nigel Mason (University of Kent, Canterbury, UK)
- Jefferson Shinpaugh (East Carolina University, Greenville, USA)
- Ilia Solov'yov (Carl von Ossietzky University, Oldenburg, Germany)
- Eugene Surdutovich (Oakland University, Rochester, Michigan, USA)

Organizing Committee

- Andrey Solov'yov (MBN Research Center, Germany) - **Co-Chair**
- Nigel Mason (University of Kent, United Kingdom) - **Co-Chair**
- Irina Solovyeva (MBN Research Center, Germany)
- Alexey Verkhovtsev (MBN Research Center, Germany)

Sponsors

The conference will be held under the auspices of the following sponsors:

- MBN Research Center, Frankfurt am Main, Germany
- University of Kent, Canterbury, United Kingdom
- H2020-MSCA-RISE Project "N-Light"
- H2020-MSCA-RISE Project "RADON"
- HORIZON EUROPE EIC-PATHFINDER Project "TECHNO-CLS"

MultIChem 2023 Conference

Participants of DySoN 2023 are highly encouraged to participate at the MultIChem 2023 conference. Participants of MultIChem 2023 will receive financial support to reimburse their travel to Prague and local accommodation expenses. The further information can be found here.

Contact Information

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DySoN 2023 Co-Chair

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DySoN Conference Web Page

Updated information on the DySoN 2023 conference is available at www.dyson-conference.org.

DySoN 2023 Conference e-mail

dyson.conference@gmail.com