

Mach-5 2024

MOLECULAR MACHINERY:
MAKING • MEASURING • MODELLING

1-4 September 2024 | Bertinoro | Italy

Scientific and Social Program

Sunday 1 September



Book of Abstracts

Inspirational Lectures | Chairperson: Alberto Credi

14:40-15:40 Molecular motions – A panorama
Jean-Marie Lehn | *University of Strasbourg, France*

15:40-16:40 From water splitting research to catenanes, knots and molecular machines
Jean-Pierre Sauvage | *University of Strasbourg, France*

Roundtable | Moderators: Rainer Herges and Alberto Credi

16:40-17:30 Open discussion: the future of molecular machines

Welcome cocktail

Monday 2 September

Session 1 | Chairperson: Cristian Pezzato

9:00-9:20 Dissipative DNA-based systems
Erica Del Grosso | *University of Rome Tor Vergata, Italy*

9:20-9:40 Photo-control of DNA assemblies through time and space
Felix Rizzuto | *University of New South Wales, Australia*

9:40-10:00 Making and breaking photo-responsive artificial molecular machines
Daisy Pooler | *KTH Royal Institute of Technology, Sweden*

10:00-10:20 Active transport of macrocycles into micelles using artificial molecular pumps
James Seale | *Northwestern University, United States*

Coffee break

Session 2 | Chairperson: Giulio Ragazzon

- 11:10-11:30 Power strokes in molecular motors: Predictive, irrelevant, or somewhere in between?
Emanuele Penocchio | *Northwestern University, United States*
- 11:30-11:50 Putting catalysis to work
Stefan Borsley | *Durham University, United Kingdom*
- 11:50-12:10 Switchable macrocycles and cages
Larissa von Krbek | *University of Bonn, Germany*
- 12:10-12:20 Promising diazocine compounds for hybrid smart materials
Artjom Businski | *Kiel University, Germany*
- 12:20-12:30 Novel prototypes of multistable [2]- and [3]rotaxanes
Leonardo Andreoni | *University of Bologna, Italy*

Lunch break

SSF Award Lectures | Chairperson: Rainer Herges

- 14:00-15:00 Mechanochemistry of molecular machines
Nathalie Katsonis | *University of Groningen, The Netherlands*
- 15:00-16:00 The Rise and Promise of Artificial Molecular Machines in Polymer Chemistry and Materials Science
Yunyan Qiu | *National University of Singapore, Singapore*

Coffee Break

Session 3 | Chairperson: Andreas Vargas-Jentzsch

- 16:20-16:40 A platform approach to mechanically caged molecules
Abed Saady | *Bar Ilan University, Israel*
- 16:40-17:00 Information ratcheting information
Benjamin Roberts | *University of Padova, Italy*
- 17:00-17:20 Repurposing a catalytic cycle for transient self-assembly
Shuntaro Amano | *ISIS Strasbourg, France*
- 17:20-17:40 Out-of-Equilibrium Mechanical Disruption of β -Amyloid-Like Fibers using Light-Driven Molecular Motors
Rémi Plamont | *CNRS Strasbourg, France*

Short Break

Session 4 | Chairperson: Robert Hein

- 17:50-18:10 A Molecular Primum Mobile
Lorenzo Casimiro | *Sorbonne University, France*
- 18:10-18:20 Molecular information ratchets exploiting the asymmetry of functionalized cyclodextrins for autonomous active transport
Enxu Liu | *Hong Kong University, China*
- 18:20-18:30 The Hitchhiker's Guide to Mechanical Stereochemistry
Peter Gallagher | *University of Birmingham, United Kingdom*
- 18:30-18:40 Operation of Artificial Molecular Pumps in Water
Christopher Lee | *University of New South Wales, Australia*
- 18:40-18:50 Influence of geometrical photoisomerization in dynamic self-assembly
Marco Ovalle | *University of Groningen, The Netherlands*

Dinner

3 September 2024

Session 5 | Chairperson: Zbigniew Pianowski

- 9:00-9:20 Ultra-Fast Molecular Rotor Dynamics: from isolated to densely packed rotor layers
Charl X. Bezuidenhout | *University of Milan "Bicocca", Italy*
- 9:20-9:40 Pushing light-driven molecular motors towards perfection
Jinyu Sheng | *University of Groningen, The Netherlands*
- 9:40-10:00 Shining Light on Porous Solids
Wojciech Danowski | *ISIS Strasbourg, France*
- 10:00-10:20 Triplet-Sensitized Isomerization of Azoswitches
Nikita Durandin | *University of Tampere, Finland*

Coffee Break

Session 6 | Chairperson: Stefano Crespi

- 11:10-11:30 A Hemithioindigo Molecular Motor Operating by Constitutional Alteration and Hydrogen Bonding
Ani Özcelik | *Erlangen-Nürnberg University, Germany*
- 11:30-11:50 Coupling Rotary Motion to Helicene Inversion within Molecular Motors
Yohan Gisbert | *University of Groningen, The Netherlands*
- 11:50-12:10 Photoluminescence for Molecular Machines and Devices
Ryojun Toyoda | *Tohoku University, Japan*
- 12:10-12:20 Wavelength-steered motion in an autonomous light-driven molecular rotor
Chiara Taticchi | *University of Bologna, Italy*

12:20-12:30 Magnetic Levitation Controlled by Light
Mirko Gerdson | *Kiel University, Germany*

Lunch

Free Time in Cervia

Guided tour of the Cervia Salt Pan (Saline di Cervia)

Social dinner

4 September 2024

Session 7 | Chairperson: Nadja Simeth

9:00-9:20 Mechanoresponsive Metal-Organic Cages
Bernd Schmidt | *Düsseldorf University, Germany*

9:20-9:40 Tuning Biocolloidal Taxis and Catalysis in Gradient of (Oligo)nucleotides
Subhabrata Maiti | *IISER Mohali, India*

9:40-10:00 Controlled fusion of polymer nanoparticles
Stephen Fielden | *University of Birmingham, United Kingdom*

10:00-10:20 Molecular Motors Driven by Electrons and Protons
Yuanning Feng | *Oklahoma University, United States*

Coffee Break

Session 8 | Chairperson: Stefano Corrà

11:10-11:30 Light-driven ratcheted self-assembly of diastereomeric host-guest systems
Iago Neira | *University of A Coruña, Spain*

11:30-11:50 Modulation of Mechanical and Nanostructural Properties of a pH-Responsive Self-Assembled Hydrogel
Arturo Blanco Gómez | *University of A Coruña, Spain*

11:50-12:10 Design and characterization of complex reaction networks in dynamic mechanically interlocked molecules
Federico Nicoli | *ISIS Strasbourg, France*

12:10-12:30 Beyond Acid-Base Reactions: Interfacing Activated Carboxylic Acids with Electrical Circuits
Giorgio Capocasa | *University of Rome Sapienza, Italy*

Lunch