Programme (UTC Time Zone)

Monday 12 April
Session 1 - Nanophotonics
Chair: Ralf Jungmann

13:50	**Introduction**
14:00	**Invited: Super-resolution with and without deep learning**
	Christophe Zimmer, Institut Pasteur, France
14:25	**Correlative DNA-PAINT/AFM Microscopy of DNA Nanostructures and Characterization of Addressable Sites**
	Christopher Green, U.S. Naval Research Laboratory, USA
14:40	**DNA Origami for magnetic plasmonics: design, assembly, and optical properties**
	Ji-Hyeok Huh, Korea University, South Korea
14:55	**DNA-Templated Programmable Excitonic Wire for Micron-Scale Exciton Transport**
	Xu Zhou, Arizona State University, USA
15:20	**Posters 1**

Session 2 - Biomedical Nanotechnology
Chair: Thom LaBean

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16:40	**Invited: Virus trapping with DNA origami shells**
	Jessica Kretzmann, Technical University of Munich, Germany
17:05	**Real-time detection of dopamine using a microfabricated biosensor**
	Ji-Won Seo, Stanford University, USA
17:20	**DNA Nanoswitch Barcodes for Multiplexed Biomarker Profiling**
	Arun Richard Chandrasekaran, University at Albany, USA
17:35	**Invited: Applying Nanotechnology to Health in the Workplace**
	John Sadowski, U.S. National Institute for Occupational Safety and Health, USA
18:00	**Posters 2**

Session 3 - Molecular Machinery
Chair: Andrew Turberfield

19:20	**Keynote: Molecular Motors for Responsive Materials**
	Ben Feringa, University of Groningen, Netherlands
20:00	**Conformational Rearrangement of a Selected Clamping RNA Polymerase Ribozyme Enables Promoter Recognition, Self-Templated Priming and Processive Polymerization**
	Razvan Cojocaru, Simon Fraser University, Canada
20:15	**A nanoscale reciprocating rotary mechanism with allosteric mobility control**
	Eva Bertosin, Technical University of Munich, Germany

Session 4
20:50	**ISNSCE Meeting**
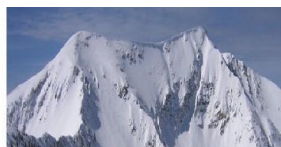
Tuesday 13 April

Session 1 - DNA Nanostructures: Semantomorphic Fabrication
Co chairs: Ned Seeman and Hao Yan

14:00	**Keynote: Building biomimetic structures with DNA nanotechnology** Chenxiang Lin, Yale University, USA
14:40	**Mechanics and Design Principles of 2D Auxetic DNA Nanostructures** Ruixin Li, Purdue University, USA
14:55	**Invited: Programmable icosahedral shell system based on the principle of virus capsids** Christian Sigl, Technical University of Munich, Germany
15:20	**Posters 3**

Session 2 - DNA Nanostructures: Semantomorphic Fabrication
Co chairs: Ned Seeman and Hao Yan

16:40	**Invited: Controlling the Transformations of DNA Origami by Modular Reconfigurable Units** Yonggang Ke, Emory University, USA
17:05	**Hybrid protein-DNA and peptide-DNA nanostructures** Nicholas Stephanopoulos, Arizona State University, USA

Session 2 - Principles and Theory of Self-Assembly
Co chair: Rebecca Schulman

17:20	**Invited: Towards programmable assemblies through geometric frustration: Understanding the limits of self-limitation** Gregory Grason, University of Massachusetts, USA
17:45	**Principles and mechanisms to control length and sequence distributions in autonomous templated copolymerisation processes** Jordan Juritz, Imperial College London, UK
18:00	**Posters 4**

Session 3 - Nucleic Acid Nanostructures In Vivo
Chair: Yamuna Krishnan

19:20	**Invited: Therapeutic modulation of tumor-associated macrophages with nanodevices** Lev Becker, The University of Chicago, USA
19:45	**DNA Origami Signposts as Tags for Electron Cryotomography** Emma Silvester, University of Oxford, UK
20:00	**Sequence Controlled DNA-Polymer Conjugates and Their Applications in Drug Delivery** Hassan Fakih, McGill University, Canada
20:15	**The Effects of Overhang Placement and Multivalency on Cell Labeling by DNA Origami** Ying Liu, Carnegie Mellon University, USA

Session 4

20:50	**Robert Dirks Prize**
	Chair: Niles Pierce
	2020 Prize – Dr. Zibo Chen, California Institute of Technology
	2021 Prize – to be announced

Wednesday 14 April

Session 1- DNA Nanosystems: Programmed Function
Chair: Fritz Simmel

14:00	**Invited: Reconfigurable DNA origami domino array-based (DODA) system**
	Jie Song, Shanghai Jiao Tong University & Institute of Basic Medicine and Cancer (IBMC), Chinese Academy of Sciences, China
14:25	**Exploring sequence space to design controllable G-quadruplex topology switches**
	Jean-Louis Mergny, École Polytechnique, France
14:40	**Digital Nucleic Acid Memory: A New Approach to DNA-based Data Storage**
	George Dickinson, Boise State University, USA
14:55	**Invited: DNA Origami Tools for Signal Amplification and Self-Repair at the Nanoscale**
	Viktorija Glembockyte, Ludwig Maximilian University of Munich, Germany
15:20	Posters 5

Session 2 - DNA Nanosystems: Programmed Function
Chair: Fritz Simmel

16:40	**DNA Self-Assembly in Constructing Hydrogel Composites with Nanocircuits**
	Ming Gao, North Carolina State University, USA

Session 2 Protein and Viral Nanostructures
Chair: Nicole Steinmetz

16:55	**Invited: A virus nanoparticle as a resealable container**
	Adam Zlotnick, Indiana University, USA
17:20	**Invited: Engineering the Vault Nanoparticle for Enzyme Stabilization**
	Leonard Rome, University of California, Los Angeles, USA
17:45	Posters 6

Session 3 - Integrated Synthetic Systems
Chair: Jeremiah Gassensmith
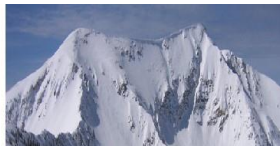
19:20	**Invited: Self-assembled lipid nanoparticles for RNA delivery: SARS-CoV-2 vaccines, chemistry, and beyond**
	Kathryn Whitehead, Carnegie Mellon University, USA
19:45	**Reprogramming DNA assembly pathways with small molecules and out-of-equilibrium systems**
	Felix Rizzuto, McGill University, Canada

20:00	Stimuli Responsive DNA/Small-Molecule Hydrogels
	Christophe Lachance-Brais, McGill University, Canada
20:15	Invited: Selective Organ Targeting (SORT) Nanoparticles for Tissue-specific mRNA Delivery and CRISPR–Cas Gene Editing
	Qiang Cheng, University of Texas, USA

Session 4

20:50	ISNSCE Nanoscience Prize
	Chair: Hanadi Sleiman
	Professor Samuel Stupp, Northwestern University

Thursday 15 April

Session 1 - Computational Tools
Chair: William Shih

14:00	Invited: Toward parameter-free, rapid prediction of DNA origami shape and mechanical properties through multiscale analysis framework
	Do-Nyun Kim, Seoul National University, Republic of Korea
14:25	Toward a 3D Product Model for CAD and VR Nanoengineering
	Paul Sorensen, Parabon NanoLabs, USA
14:40	A formal approach for automated generation of DNA origami designs
	Bolutito Babatunde, Carnegie Mellon University, USA
14:55	Invited: Design of arbitrary freeform DNA origami structures
	Chao-Min Huang, Duke University, USA
15:20	Posters 7

Session 2 - Synthetic Biology
Chair: Alex Deiters

16:40	Invited: Stimulus-responsive self-assembly of protein-based fractals by computational design
	Sagar Khare, Rutgers University, USA
17:05	Kinetic characterization and intracellular applications of heterochiral strand displacement reactions
	Nandini Kundu, Texas A&M University, USA
17:20	Proton gradients from light-harvesting E. coli trigger DNA cortex formation for synthetic cells
	Kevin Jahnke, Max Planck Institute for Medical Research, Germany
17:35	Invited: Quantitative biology with droplet microfluidics
	Adam Abate, University of California, USA
18:00	Conference Close