Monday, May 15, 2023

Towards a Universal Description of Equilibrium Structure and Assembly, Chair: Michael Engel
(FAU Erlangen-Nuremberg)

8:50am Mark Bowick (KITP) Welcome [Video] [CC]
9:00am Mario Tagliazucchi (U. Buenos Aires) Modeling the phase behavior of nanoparticle superlattices with a molecular theory [Slides] [Video] [CC]
9:45am Lisa Hall (Ohio State) Coarse-grained simulations of polymer-grafted nanoparticle monolayers [Slides] [Video] [CC]
10:30am Morning Break

11:00am Zvonimir Dogic (UCSB) Assembly, disassembly and mechanics of nanoparticle vesicles [Video] [CC]
11:45am Alex Travesset (ISU) When are Nanocrystals Hard Shapes: The role of Ligands in Nanocrystal Assembly [Video] [CC]
12:30pm Lunch Break

In- and Out-of-Equilibrium Colloidal Systems, Chair: Thi Vo (Johns Hopkins U)

2:00pm Qian Chen (Illinois U) Electron videography of nanoparticles in and out of equilibrium [Video] [CC]
2:45pm Xingchen Ye (Indiana) Dynamics and emergent complexity in self-assembled nanoparticle superlattices [Video] [CC]
3:30pm Afternoon Break

4:00pm David Limmer (Berkeley) Nonequilibrium design strategies for functional colloidal assemblies [Video] [CC]
4:45pm Sharon Glotzer (Michigan) Next steps in patchy particle assembly engineering [Video] [CC]
5:30pm SHUTTLE TO BWSCI

Tuesday, May 16, 2023

New Superlattice Structures and their Applications, Chair: Alex Travesset (ISU)

9:00am Rob Macfarlane (MIT) Macroscopic nanoparticle superlattices via self-assembly [Video] [CC]
9:45am Dmitri Talapin (U. Chicago) Self-assembly of electrostatically-stabilized nanocrystal into strongly electronically coupled supercrystalline solids [Video] [CC]
10:30am Morning Break

11:00am Tobias Hanrath (Cornell) Emergent phenomena in semiconductor nanoparticle assemblies [Slides] [Video] [CC]
11:45am Dmitry Baranov (Lund U) Collective X-ray Diffraction and Photoluminescence in Perovskite Nanocrystal Superlattices [Slides] [Video] [CC]
12:30pm Lunch Break

Frustration Phenomena in Colloidal Assembly, Chair: Michael Grünwald (U of Utah)

2:00pm Poster Presentation
Wednesday, May 17, 2023

Design of Nanoparticle Assemblies, Chair: Xiaoming Mao (U Michigan)

9:00am Tobias Kraus (INM)  
**Self-assembling ultrathin nanowires into bundles, fibres, and transparent electrodes**[Slides][Video][CC]

9:45am Chad Mirkin (Northwestern)  
**Repurposing the blueprint for life through colloidal crystal engineering with DNA**[Video][CC]

10:30am  
**Morning Break**

11:00am Marjolein Dijkstra (Utrecht U)  
**Accelerating the discovery and design of nanoparticle assemblies**[Video][CC]

11:45am Grant Rotskoff (Stanford)  
**Probing thermodynamic stability with generative models: from sampling to coarse-graining and back**[Video][CC]

12:30pm  
**Lunch Break**

**DNA Nanotechnology for Nanoparticle Assembly, Chair: Tobias Kraus (INM)**

2:00pm Alexei Tkachenko (BNL)  
**Informational matter: from intelligent design to evolution**[Video]

2:45pm Oleg Gang (Columbia)  
**Nanoscale systems with programmable architectures and transformation states**[Protected][Video][CC]

3:30pm  
**Afternoon Break**

4:00pm Guillermo Ivan Guerrero Garcia (U San Luis Potosi)  
**Ion correlations and excluded volume effects in aqueous electrolyte solutions with charged nanoparticles**[Video][CC]

4:45pm Tim Liedl (LMU Munich)  
**Nanoarticles assembled by DNA: from devices to lattices**[Embargoed]

5:30pm  
**RECEPTION**

6:00pm  
**SPECIAL EVENTS DINNER**

8:00pm  
**SHUTTLE TO BWSCI**

Thursday, May 18, 2023

Nanoassemblies and their Quantum Properties, Chair: Eran Rabani (Berkeley)

9:00am Uri Banin (Hebrew U Jerusalem)  
**Coupled colloidal quantum dot molecules**[Video][CC]

9:45am Alexander Efros (Naval Research Lab.)  
**Dark and photo-conductivity in ordered array of nanocrystal solids**[Video][CC]

10:30am  
**Morning Break**
11:00am Victor Klimov (LANL)  
*Fundamental and applied aspects of laser diodes based on colloidal quantum dots*[Video][CC]

11:45am Oleg Prezhdo (USC)  
*Ab initio excited state dynamics in nanoclusters: semiconducting, metallic and perovskites*[Video] [CC]

12:30pm   
Lunch Break

**Connections to Biology, Chair: Qian Chen (Illinois U)**

2:00pm Hannu Häkkinen (U Jyvaskyla)  
*Interfaces between atomically precise metal nanoparticles and biomolecules: Prospects and challenges*[Slides][Video][CC]

2:45pm Gerard Wong (UCLA)  
Viral afterlife: SARS-CoV-2 as a reservoir of peptides that re-assemble into pro-inflammatory nanocrystalline complexes*[Embargoed]

3:30pm  
**CONFERENCE END SHUTTLE TO BWSCI**  
*Also available to SB Airport and SB Airbus, Goleta location (See Registration Desk BEFORE THURSDAY to sign up.)*