Nanoparticle Synthesis and Assembly

Faraday Discussion

20-22 April 2015
Chicago, USA

Monday 20 April

11:00	Registration, Tea and Coffee	
12:00	Lunch	
12.45	**Welcome and Introductions** Argonne Deputy Director Alfred P. Sattelberger and Chair of Scientific Committee	
12:55	**Outline of Discussion Format** Publishing Editors	
13.00	**Introductory Lecture** Paul Alivisatos *University of California, Berkeley, USA*	
13:50	Discussion	
	Session 1: New routes to control nanoparticle synthesis (part 1) Session Chair: Elena Shevchenko*, Argonne National Laboratory*	
14:00	**Platinum and platinum based nanoalloys synthesized by wet chemistry** Christophe Petit*, Caroline Salzemann, Farid Kameche, Anh-Tu Ngo, Pascal Andreazza and Monica Calatayud *University P. & M. Curie, France*	Paper 4691
14:05	**Bicontinuous microemulsions for high yield, wet synthesis of ultrafine nanoparticles: a great approach** Ger Koper*, Roman Latsuzbaia and Emanuela Negro *TU Delft, The Netherlands*	Paper 5236
14:10	**A new route towards colloidal molecules with externally tunable interaction sites** Peter Schurtenberger*, Linda Månsson, Jasper N. Immink, Adriana M. Mihut and Jérôme J. Crassous *Lund University, Sweden*	Paper 4689
14:15	Discussion	
15:30	Afternoon Tea	
	Session 2: New routes to control nanoparticle synthesis (part 2) Session Chair: Chris Sorensen, *Kansas State University*	
16:00	**Biologically controlled synthesis and assembly of magnetite nanoparticles** Damien Faivre*, Mathieu Bennet, Robert Neely, Andreas Schertel, Andrè Körnig, Cristina Flors, Frank D. Müller, Dirk Schüler, Stefan Klumpp and Luca Bertinetti *Max Planck Institute of Colloids and Interfaces, Germany*	Paper 5013
16:05	**Kinetics of aggregation and growth processes of PEG-stabilised mono- and multivalent gold nanoparticles in highly concentrated halide solutions**	Paper 5373

	Christina Graf*, Benjamin Stein, David Zopes, Madlen Schmudde, Ralf Schneider, Ahmed Mohsen, Christian Goroncy and Sanjay Mathurb *Freie Universitaet, Berlin, Germany*	
16:10	**A thermodynamic gauge for mobile counter ions from c colloids and nanoparticles** Albert Philipse*, Bonny W.M Kuipers and Agienus Vrij *Utrecht University, The Netherlands*	Paper 4688
16:15	Discussion *With invited discussion remark by Dmitri Talapin, University of Chicago*	
17:30	Lightning presentations (by invitation of the Scientific Committee)	
17:45	Poster session and Wine reception *Sponsored by Cogent*	
19:00	Dinner	

Tuesday 21 April

	Session 3: New routes to control nanoparticle synthesis (part 3) Session Chair: Yugang Sun, *Argonne National Laboratory*	
09:00	**Soft-patchy nanoparticles: modelling and self-organization** Emanuela Bianchi*, Christos Likos, Barbara Capone and Gerhard Kahl *University of Vienna, Austria*	Paper 4687
09:05	**Synthesis of multivalent silica nanoparticles combining both enthalpic and entropic patchiness** Etienne Duguet*, Serge Ravaine, Céline Hubert, Cyril Chomette, Anthony Désert, Ming Sun, Adeline Perro, Stéphane Mornet, and Mona Tréguer-Delapierre *CNRS, University of Bordeaux, France*	Paper 5367
09:10	Discussion	
10:00	Morning Tea	
	Session 4: Self-assembly process control Session Chair: Xiao-Min Lin, *Argonne National Laboratory*	
10:30	**Nanocrystal superlattices that exhibit improved order on heating: an example of inverse melting?** Brian Korgel*, Yixuan Yu, Avni Jain, Adrien Guillaussier, Vikas Reddy Voggu, Thomas M. Truskett and Detlef-M. Smilgies *University of Texas, Austin, USA*	Paper 4686
10:35	**Concentrated assemblies of magnetic nanoparticles in ionic liquids** Régine Perzynski*, Marianna Mamusa, Juliette Sirieix-Plénet, Fabrice Cousin, Emmanuelle Dubois and Véronique Peyre *Université Pierre et Marie Curie – Paris 6, France*	Paper 5334
10:40	**Trioctylphosphine as self-assembly inducer** Gunadhor S. Okram*, Jaiveer Singh, Netram Kaurav and Niranjan P. Lalla *UGC-DAE Consortium for Scientific Research, India*	Paper 5275

10:45	Discussion	
12:00	Lunch	
	Session 5: Drying mediated self-assembly process Session Chair: Bruce Law, *Kansas State University*	
13:00	**Insights into mechanisms of capillary assembly** Lucio Isa*, Songbo Ni, Jessica Leemann and Heiko Wolf *ETH Zurich, Switzerland*	Paper 4685
13:05	**Optically anisotropic substrates *via* wrinkle-assisted convective assembly of gold nanorods on macroscopic areas** Andreas Fery*, Tobias A.F König, Matthias Karg, Munish Chanana, Christian Kuttner, Christoph Hanske, Martin Mayer, Bernhard A. Glatz, Patrick T. Probst, Mareen B. Müller and Moritz Tebbe *University of Bayreuth, Germany*	Paper 5359
13:10	**Soft repulsive interactions, particle rearrangements and size selection in the self-assembly of nanoparticles at liquid interfaces** Emanuela Del Gado*, Konrad Schwenke *Georgetown University, USA*	Paper 5381
13:15	**Monitoring pattern formation in drying and wetting dispersions of gold nanoparticles by ESEM** Casper Kunstmann-Olsen* Mathias Brust and Domagoj Belić *University of Liverpool, UK*	Paper 5358
13:20	Discussion	
15:00	Afternoon Tea	
	Session 6: Properties of self-assembled nanostructures Session Chair: Fernando Bresme, *Imperial College London*	
15:30	**Mechanical properties of self-assembled nanoparticle membranes: stretching and bending** Yifan Wang*, Pongsakorn Kanjanaboos, Sean P. McBride, Edward Barry, Xiao-Min Lin and Heinrich M. Jaeger *University of Chicago, USA*	Paper 5364
15:35	**Temperature effects on nanostructure and mechanical properties of single-nanoparticle thick membranes** K. Michael Salerno*, Gary Grest *Sandia National Laboratories, USA*	Paper 5369
15:40	**Determination of a localized surface plasmon resonance mode of Cu_7S_4 nanodisks by plasmon coupling** Toshiharu Teranishi*, Lihui Chen, R.Sato and Masanori Sakamoto *Kyoto University, Japan*	Paper 4682
15:45	Discussion *With invited discussion remark by Subramanian Sankaranarayanan, Argonne National Laboratory*	
17:00	Close of sessions	
17:00	Facility Tour: Centre for Nanoscale Materials	

18:30	Pre-Dinner Drinks - Argonne Guest House
19:00	Conference Dinner - Argonne Guest House

Wednesday 22 April

	Session 7: Field-assisted self-assembly process (part 1) Session Chair: Helmurt Mohwald, *Max Planck Institute of Colloids and Interfaces*	
09:00	**Low-current field-assisted assembly of copper nanoparticles for current collectors** Nicholas Kotov*, Lehao Liu, Bong Gill Choi, Siu On Tung, Yajie Liu, Tiehu Li and Tingkai Zhao *University of Michigan, USA*	Paper 5375
09:05	**Magnetic field-induced self-assembly of iron oxide nanocubes** Rafal Klajn*, Gurvinder Singh, Henry Chan, Artem Baskin, Elijah Gelman, Gregory Leitus, T. Udayabhaskararao, Davide Peddis and Petr Kral *Weizmann Institute of Science, Israel*	Paper 5262
09:10	Discussion *With invited discussion remark by Petr Kral, University of Illinois at Chicago*	
10:00	Morning Tea	
	Session 8: Field-assisted self-assembly process (part 2) Session Chair: Subramanian Sankaranarayanan*, Argonne National Laboratory*	
10:30	**Changing the magnetic properties of microstructure by directing the self-assembly of superparamagnetic nanoparticles** Ishwar K. Puri* , Suvojit Ghosh *McMaster University, Canada*	Paper 5374
10:35	**Magnetophoretic assembly of flexible nanoparticles/lipid microfilaments** Orlin D. Velev*, Bhuvnesh Bharti and Anne-Laure Fameau *North Carolina State University, USA*	Paper 5351
10:40	**Directing the orientational alignment of anisotropic magnetic nanoparticles using dynamic magnetic fields** Sabrina Disch*, Daniel Hoffelner, Matthias Kundt, Annette M. Schmidt, Emmanuel Kentzinger and Philipp Bender *University of Cologne, Germany*	Paper 5376
10:45	Discussion	
12:00	**Concluding remarks** David Schiffrin *University of Liverpool, UK*	
12:55	**Acknowledgements**	
13:00	**Close of meeting**	
13:00	**Lunch**	