

NaNaX 3 Program

Wednesday May 21

9:00 – 9:10 Welcome

Session I: Growth (1) chaired by Uri Banin

- 9:10 – 9:40 **A1: Artificial molecules built from colloidal nanocrystals**
Paul Alivisatos (invited)
University of California-Berkeley, USA
- 9:40 – 10:10 **A2: Electronic structure of graphene: the effect of quantum confinement**
Alessandra Lanzara (invited)
University of California-Berkeley, USA
- 10:10 – 10:30 **A3: Blue Luminescence and Superstructures from Magic Size Clusters of CdSe**
Michael Krueger, F. S. Riehle, R. Bienert, R. Thomann, G. Urban
Freiburg Materials Research Center (FMF), University of Freiburg, Freiburg, Germany; Institute for Microsystems Technology (IMTEK), University of Freiburg, Freiburg, Germany; Institute of Physical Chemistry, University of Freiburg, Freiburg, Germany
- 10:30 – 10:50 **A4: Gel electrophoresis as a tool for size and shape selective nanocrystal preparation**
Carsten Soennichsen, Matthias Hanauer, Sebastien Pierrat, Inga Zins, Alexander Lotz
Institute for Physical Chemistry, University of Mainz, Mainz, Germany.
- 10:50 – 11:10 Coffee break
- 11:10 – 11:40 **A5: Co based nano objects**
Katerina Soulantica (invited)
CNRS Toulouse, France
- 11:40 – 12:00 **A6: Colloidal magnetic semiconductor oxide heterostructures: site selective epitaxial growth of spherical Fe₂O₃ domains onto phase controlled TiO₂ nanorods**
Raffaella Buonsanti, Elvio Carlino, Fabia Gozzo, Vincenzo Grillo, Cinzia Giannini, Liberato Manna, Miguel Angel Garcia, Roberto Cingolani, Davide Cozzoli
Nanotechnology Laboratory of CNR-INFM, Unità di Ricerca IIT, Distrett Tecnologico ISUFI, Lecce, Italy; TASC-INFM-CNR National Laboratory, Area Scienze Park-Basovizza, Trieste, Italy; CNR Istituto di Cristallografia (IC), Bari, Italy; Swiss Light Source, Paul Scherrer Institute, Villigen, Switzerland; Institute of Applied Magnetism and Departement of Materials Physiks, Las Rozas, Madrid, Spain
- 12:00 – 12:20 **A7: Synthesis and characterisation of coated ferrite nanoparticles for theranostic application**
Claudio Sangregorio, Adriano Boni, Maria F. Casula, Patrizia Floris, Claudia Innocenti, Alessandro Lascialfari, Massimo Marinone, Wolfgang J. Parak, Costanza Ravagli
Dipartimento di Chimica and INSTM, Università di Firenze, Sesto Fiorentino, Italy; Dipartimento di Scienze Chimiche and INSTM, Università di Cagliari, Monserrato, Italy; Istituto di Fisiologia e Chimica Biologica, Università di Milano, Milano, Italy; Philipps Universitaet Marburg, Marburg, Germany; Centro Ricerche Colorobbia, Sovigliana, Vinci, Italy
- 12:20 – 12:40 **A8: Amine borane derivatives as new reagents for the synthesis of core shell magnetic nanoparticles**
Catherine Amiens, Diana Ciuculescu, Gilles Alcaraz, A. Falqui, Marc Respaud, Pierre Lecante, Robert E. Benfield, Linqin Jiang, Kai Fauth, Alevtina Smeckova, Fabrice Wilhelm, Andrei Rogalev, Bruno Chaudret
Laboratoire de Chimie de Coordination, CNRS-UPR8241, Toulouse, France; Laboratoire de Physique et Chimie des Nano-Objets, INSA, Toulouse, France; Centre d'Elaboration des Matériaux et d'Etudes Structurales, CNRS, Toulouse, France; Functional Materials Group, School of Physical Sciences, University of Kent, Canterbury, U.K.; Max-Planck-Institut fuer Metallforschung, Stuttgart, Germany; European Synchrotron Radiation Facility, Grenoble Cedex, France

12:40 – 13:00 **A9: Manipulation and electroluminescence of individual CdSe nanocrystals on carbon based surfaces**

Geneviève Comtet, Elizabeth Boer Duchemin, Gérald Dujardin, Edern Tranvouez
Laboratoire de Photophysique Moléculaire, Université Paris-Sud, Orsay, France

13:00 – 14:30 **Lunch**

Session II: Optics chaired by Liberato Manna

14:30 – 15:00 **A10: Ultrafast dynamics in nanostructures**

Guglielmo Lanzani (invited)
Politecnico di Milano, Italy

15:00 – 15:30 **A11: White light emitting semiconductor nanocrystals**

Andrey Rogach (invited)
Ludwig-Maximilian-Universität, Germany

15:30 – 15:50 **A12: Hybrid colloidal nanocrystal organics based LEDs**

Aurora Rizzo, Marco Mazzeo, Yanqin Li, and Giuseppe Gigli
National Nanotechnology Laboratory of CNR INFM, 73100 Lecce, Italy

15:50 – 16:10 **A13: Novel Multi photon Microscopy based on Resonant Nonlinear Optics of Colloidal Quantum Dots**

Francesco Masia, Wolfgang Langbein, Paola Borri
School of Physics and Astronomy, Cardiff University, Cardiff, UK; School of Biosciences, Cardiff University, Cardiff, UK

16:10 – 16:30 **A14: Stable and tunable quantum dot dye hybrids: Preparation, transient absorption and single particle spectroscopy**

Thomas Basché, Ting Ren, Liu, Prasun Mandal, Victor Matylytsky, Wolfgang Erker, Gerald Hinze, Yuri Avlasevich, Klaus Muellen, Josef Wachtveitl
Institut für Physikalische Chemie, Johannes Gutenberg- Universität, Mainz, Germany; Max Planck-Institut für Polymerforschung, Mainz, Germany; Institut für Physikalische und Theoretische Chemie, Universität Frankfurt, Frankfurt, Germany

16:30 – 16:50 **Coffee break**

16:50 – 17:20 **A15: Mesoscopic enhancement of emission and scattering of light in nanostructures**

S. V. Gaponenko (invited)
B. I. Stepanov Institute of Physics, National Academy of Sciences of Belarus, Minsk, Belarus

17:20 – 17:40 **A16: Charge carrier dynamics of individual semiconductor nanostructures**

Alf Mews, Anton Myalitsin, Zhen Li, Zhe Wang, Jessica Voelker, Ma Xuedan, Maxime Tchaya, Andreas Kornowski
Department of Chemistry-Biology, University of Siegen, Siegen, Germany; Institute of Physical Chemistry, University of Hamburg, Hamburg, Germany

17:40 – 18:00 **A17: Linearly polarized light emission of single CdSe/CdS tetrapod shaped nanocrystals**

Christian Mauser, Thomas Limmer, Enrico Da Como, Andrey Rogach, Jochen Feldmann, Dimitri V. Talapin
Photonics and Optoelectronics Group, Physics Department and CeNS, Ludwig-Maximilian-Universität, Muenchen, Germany; Department of Chemistry, The University of Chicago, Chicago, Illinois, USA

18:00 – 18:20 **A18: Synthesis and optical spectroscopy of highly luminescent type II CdTe/CdSe and ZnTe/CdSe colloidal heteronanocrystals**

Celso de Mello Donegá, Veronique Gevaerts, Esther Groeneveld, Patrick T.K.Chin, Rolf Koole, Evelien M. van Schrojenstein Lantman
Condensed Matter and Interfaces – Debye Institute, Utrecht University, Utrecht, The Netherlands

- 18:20 – 18:40 **A19: Energy transfer from CdSe quantum dots to oriented CdSe quantum rods**
Patrick T. K. Chin, Rifat A. M. Hikmet, Stefan C. J. Meskers, René A. J. Janssen
Molecular Materials and Nanosystems, Eindhoven University of Technology, Eindhoven, The Netherlands; Photonic Materials & Devices, Philips Research Laboratories Eindhoven, High Tech Campus, Eindhoven, The Netherlands
- 18:40 – 19:00 **A20: Coherent X ray Diffraction Imaging of non periodic single objects**
Cinzia Giannini, Liberato De Caro, Antonella, Guagliardi, Daniele Pelliccia, Stefano Lagomarsino, Alessia Cedola, Christian Mocuta, Till Hartmut Metzger
Istituto di Cristallografia – Consiglio Nazionale delle Ricerche (IC-CNR), Bari, Italy; Istituto di Fotonica e Nanotecnologie – CNR (IFN-CNR), Roma, Italy; ESRF, BP 220, Grenoble Cedex, France; Institut für Synchrotronstrahlung - ANKA-Forschungszentrum Karlsruhe ,Eggenstein-Leopoldshafen, Germany
- 19:00 – 19:20 **A21: Inkjet printed nanocrystal photodetectors operating up to 3 micrometer wavelength**
Wolfgang Heiss, M. Böberl, M. V. Kovalenko, S. Gamerith, E. J. W. List
Institute of Semiconductor and Solid State Physics University Linz, Linz, Austria; C.Doppler Laboratory Advanced Functional Materials, Institute of Solid State Physics, Graz University of Technology, Graz, Austria; Institute of Nanostructured Materials and Photonics, Johanneum Research, Weiz, Austria
- 19:20 – 19:40 **A22: Fabrication and optical characterization of Photonic Crystal Nanocavities with Colloidal Nanocrystals**
Luigi Martiradonna, L.Carbone, A. Tandaechanurat, M.Kitamura, B.Antonazzo, S. Iwamoto, L.Manna, R. Cingolani, Y. Arakawa, M. De Vittorio
IIS, INQIE, RCAST, the University. of Tokyo; NNL-ISUFI, Università del Salento, Italy
- 20:00 **Memorial lecture of Paul Alivisatos for Giulia Adesso**

Thursday May 22

Session III: Bio applications and surface functionalization (1)

chaired by Wolfgang Parak

- 9:00 – 9:30 **A23: Infrared Emitting quantum Dots for in vivo Imaging: Opportunities in the clinic?**
Marcel Bruchez (invited)
Carnegie Mellon University, USA
- 9:30 – 9:50 **A24: Au nanoparticles integrated and bi metal – clad waveguide biosensors**
A.S. Batti, H. M. Quddusi, M. Yasar
Department of Physics COMSATS Institute of Information Technology, Islamabad, Pakistan
- 9:50 – 10.10 **A25: Exploring interactions between Nanoparticles and Biological Systems**
Neus G. Bastús, Joan Comenge, Scorro Vázquez Campos, Eduald Casals, Miriam Varon, Victor Puntès
Institut Català de Nanotecnologia, Campus UAB Bellaterra, Barcelona, Spain; Institut Català de Recerca i Estudis Avançats (ICREA) Barcelona, Spain
- 10:10 – 10:30 **A26: Incorporation of Polyelectrolyte Multilayer Capsules by living Cells**
Pilar Rivera Gil, A. Muñoz Javier, P. del Pino, M. Bedard, A. Skirtach, O. Kreft, G. Sukhoruko, W. J. Parak
Fachbereich Physik, Phillips Universität Marburg, Marburg, Germany; Max-Planck -Institut für Kolloid-und Grenzflächenforschung, Golm, Germany
- 10:30 – 10:50 **Coffee break**
- 10:50 – 11:20 **A27: Effect of nature, size and coating on biochemical applications of magnetite nanoparticles**
Maria Del Puerto Morales, A. G. Roca, R. Costo, S. Veintemillas Verdaguer, C.J. Serna (invited)
Instituto de Ciencia de Materiales de Madrid, Madrid (Spain)
- 11:20 – 11:40 **A28: Rod shaped semiconductor nanocrystals elicit neuronal activity in vivo**
Claudia Tortiglione, Maria Ada Malvindi, Alessandra Quarta, Luigi Carbone, Angela Tino, Liberato Manna, Teresa Pellegrino
CNR, Istituto di Cibernetica "E Caianiello" Pozzuoli, Italy; National Nanotechnology Laboratory of CNR-INFN, Unità di ricerca IIT and Scuola Superiore ISUFI, Lecce, Italy

- 11:40 – 12:00 **A29: Bioconjugation strategies and temperature controlled cell uptake of gold nanoparticles obtained by laser ablation in liquid solution**
Vincenzo Amendola, Moreno Meneghetti
Department. of Chemical Sciences, University of Padova, Padova, Italy
- 12:00 – 12:20 **A30: Bioimaging using less toxic Quantum Dots**
Thomas Nann, Salam Massadeh, Shu Xu, Alexei Merkoulov
School of Chemical Sciences and Pharmacy University of East Anglia(UEA), Norwich, UK
- 12:20 – 12:40 **A31: Bifunctional Nanocomposites: Synthesis, Surface Functionalization and Application**
S.Tamil Selvan, Alex W. H. Lin, Pranab K. Patra, Chung Yen Ang, Shujun Gao,
 Georgia C. Papaefthymiou, Jackie Y. Ying
Institute of Bioengineering and Nanotechnology, The Nanos, Singapore; Department of Physics, Villanova University, Villanova, Pennsylvania, USA
- 12:40 – 13:00 **A32: Surface chemistry of colloidal PbSe nanocrystals**
Iwan Moreels, Bernd Fritzing, David De Munck, Frank Vanhaecke, José C. Martins, Zeger Hens
Physics and Chemistry of Nanostructures, Ghent University, Ghent, Belgium; NMR Structure Analysis Unit, Ghent University, Ghent, Belgium; Laboratory of Analytical Chemistry, Ghent University, Ghent, Belgium
- 13:00 – 14:30 **Lunch**

Session IV: Bio applications and surface functionalization (2)

chaired by Marcel Bruchez

- 14:30 – 15:00 **A33: Formation of Tissue by Nanoactions of Cells**
Joachim Spatz (invited)
University of Heidelberg, Germany
- 15:00 – 15:20 **A34: A general one step biofunctionalization of magnetic nanoparticles: chemistry and surface characterization.**
Davide Prosperi, Laura Polito, Diego Monti
Department of Organic and Industrial Chemistry, University of Milan, Milan, Italy; Nanobiotechnology Laboratory of CNR-ISTM, Milan, Italy
- 15:20 – 15:40 **A35: Biotemplates for nanoparticle deposition**
Nadja C. Bigall, Manuela Reitzig, Paul Simon, Wolfgang Naumann, Karl Heinz van Pée, Alexander Eychmüller
Physical Chemistry, TU Dresden, 01062 Dresden, Germany; Biochemistry, TU Dresden, 01061 Dresden, Germany; MPI Chemical Physics of Solids, 01187 Dresden, Germany
- 15:40 – 16:00 **A36: Colloidal quantum dot ligand characterization by solution NMR**
Zeger Hens, Bern Fritzing, Petra Lommens, Rolf Koole, Ivan Moreels, Jose C. Martins
Physics and Chemistry of Nanostructures, Ghent University, Ghent, Belgium; Organic Chemistry Department, Ghent University, Ghent, Belgium; Condensed Matter and Interfaces, Utrecht University, Utrecht, The Netherlands
- 16:00 – 16:20 **A37: Size determination water soluble colloidal nanoparticles a comparison of different techniques**
Ralph A. Sperling, Feng Zhang, Marco Zanella, Wolfgang J. Parak
Phillips Universitaet Marburg, AG Biophotonics, Marburg, Germany
- 16:30 – 19:00 **Poster session and Coffee**
- 20:30 **Conference dinner at Torre del Parco / nomination of best student poster award winner**

Friday May 23

Session V: Growth (2)

chaired by Katerina Soulantica

- 9:00 – 9:30 **A38: Semiconductor nanoparticles carbon nanotubes composites**
Beatriz H. Juárez, C. Klinke, A. Kornowski, A.B. Hungría, P.A.Midgle, and H. Weller (invited)
Institute of Physical Chemistry, University of Hamburg, Department of Materials Science. University of Cambridge

- 9:30 – 10:00 **A39: Cadmium free highly luminescent semiconductor nanocrystals**
Peter Reiss (invited)
CEA Grenoble, France
- 10:00 – 10:20 **A40: Defect induced transformation of lamellar regions of silver nanoprisms from fcc to hcp crystal structure**
Damian Aherne, Deirdre Ledwith, Matthew Gara, John M. Kelly
School of Chemistry, Trinity College Dublin, Ireland
- 10:20 – 10:50 **A41: Effector controlled growth of silver shells on gold nanoparticles in batch and under micro flow through conditions**
P. Mike Guenther, J. Michael Koehler, Henry Romanus
Technische Universität Ilmenau, Ilmenau, Germany
- 10:50 – 11:10 **Coffee break**
- 11:10 – 11:30 **A42: On the Incorporation Mechanism of Hydrophobic Quantum Dots in Silica Spheres by a Reverse Microemulsion Method**
Rolf Koole, Matti van Schooneveld, Jan Hilhorst, Celso de Mello Donega, Dannis't Hart, Alfons Van Blaaderen, Daniel Vanmaekelbergh, Andries Meijerink
CMI, Debye Institute, Utrecht University, Utrecht, The Netherlands; Soft Condensed Matter, Debye Institute, Utrecht University, Utrecht, The Netherlands
- 11:30 – 11:50 **A43: Size Distribution of Superparamagnetic Particles and Clusters Determined by Magnetic Sedimentation**
J. F. Berret, O. Sandre, A. Mauger
Matière et Systèmes Complexes, UMR 7057 CNRS Université Denis Diderot Paris-VII, Bâtiment Condorect, Paris, France; Laboratoire Liquides Ioniques et Interfaces Chargées, UMR7612 CNRS Université Pierre et Marie Curie Paris-VI, Paris, France; Département Mathématique Informatique Physique Planète et Université, CNRS, Paris, France
- 11:50 – 12:20 **A44: Hybrid metal semiconductor nanoparticles: a new type of functional materials**
Uri Banin (invited)
Hebrew University, Jerusalem, Israel
- 12:20 – 12:50 **A45: Carbon Nanotubes: useful templates for hybrid materials production**
Miguel A. Correa Duarte (invited)
University of Vigo, Spain
- 12:50 – 13:10 **A46: 2D and 3D Nanocrystal Systems: Applications between Optics and Electronics**
Jessica Pacifico, Paul Mulvaney, Luis M. Liz Marzán
Departamento de Química Física, Universidade de Vigo, Vigo, Spain; BIO21 Institute, University of Melbourne, Parkville, Australia
- 13:10 – 14:30 **Lunch**

Session VI: Electronics and Devices

chaired by Roman Krahné

- 14:30 – 15:00 **A47: Proximity effects and collective phenomena in nanocrystalline semiconductor systems**
Oded Millo, Dov Steiner, Hadar Levi, Doron Azulay, Isaac Balberg, Assaf Salant, Assaf Aharoni, Uri Banin (invited)
Racah Institute of Physics and the Center for Nanoscience and Nanotechnology; Institute of Chemistry and the Center for Nanoscience and Nanotechnology; The Hebrew University of Jerusalem, Israel
- 15:00 – 15:20 **A48: Memory and photoconductivity effects in zinc oxide nanoparticle films**
Neil C. Greenham, Jianpu Wang, Yizheng Jin
Cavendish Laboratory, Cambridge, U.K.
- 15:20 – 15:50 **A49: PbSe quantum dots: single particle energy levels and quantum mechanical coupling measured with Scanning Tunneling Microscopy**
K. Overgaag, P. Liljeroth, B. Grandidier, D. Vanmaekelbergh
Condensed Matter and Interfaces Debye Institute, Utrecht University, Utrecht, The Netherlands; Institut d'Electronique, de Micro-électronique et de Nanotechnology, ISEN, Lille, France; IBM Zuerich Research Laboratory, Rueschlikon, Switzerland.

- 15:50 – 16:10 **A50: Dipolar Structures in Colloidal Dispersions of PbSe and CdSe Quantum Dots**
Arian Houtepen, M. Klokkenburg, R. Koole, B.H. Ern , D. Vanmaekelbergh
Condensed Matter and Interfaces, Utrecht University, Utrecht, The Netherlands; Van 't Hoff Laboratory for Physical and Colloid Chemistry, Utrecht University, Utrecht, The Netherlands; Opto-electronic Materials, Delft University of Technology, The Netherlands
- 16:10 – 16:40 **A51: Electrical transport and Raman scattering of a single organic molecule**
Israel Bar Joseph (invited)
Weizmann Institute, Israel

16:40 – 17:00 **Coffee break**

Session VII: Theory chaired by Israel Bar Joseph

- 17:00 – 17:30 **A52: Distribution of carrier multiplication rates in nanocrystals**
Eran Rabani (invited)
University of Tel Aviv, Israel
- 17:30 – 17:50 **A53: Implications of CoPt₃ Au interface properties on the growth of colloidal CoPt₃ Au nanocrystal heterodimers: an ab initio study**
Letizia Chiodo, Fabio Della Sala, Teresa Pellegrino, Roberto Cingolani, Liberato Manna
National Nanotechnology Laboratory of CNR-INFM, Lecce, Italy
- 17:50 – 18:10 **A54: Plasmon Coupling Between Gold Nanorod and Adsorbed Organic Molecule**
Anushree Roy, Goutam Chandra, Gautam Mukhopadhyay
Indian Institute of Technology, Kharapur, India; Department of Physics, Indian Institute of Technology Mumbai India
- 18:10 – 18:30 **A55: Excited state properties of functionalized Silicon Quantum Dots: A theoretical investigation based on time dependent DFT**
Thomas A. Niehaus, Xian Wang, Quansong Li, Ruiqin Zhang, Thomas Fraunheim
Bremen Center for Computational Materials Science Bremen, Germany; Centre of Super-Diamond and Advanced Films (COSDAF) and Department of Physics and Materials Science, City University of Hong Kong, Hong Kong SAR, China

Session VIII: Assembly chaired by Oded Millo

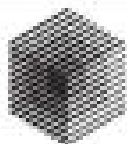
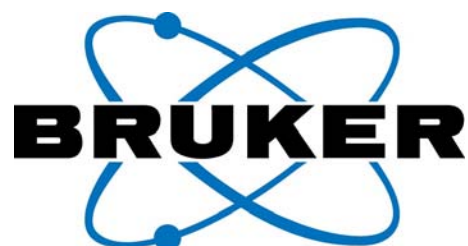
- 18:30 – 18:50 **A56: Micrometer scale assembly of colloidal CdSe/CdS nanorods**
Concetta Nobile, Luigi Carbone, Milena De Giorgi, Giovanni Morello, Roberto Cingolani, Liberato Manna, Roman Krahnle
Scuola Superiore ISUFI and National Nanotechnology Laboratory of CNR-INFM, Distretto Tecnologico, Lecce, Italy;
- 18:50 – 19:10 **A57: Colloidal nanocrystal based nanocomposites as novel functional materials**
M. Striccoli, C. Ingresso, A. Panniello, C. Sciancalepore, T. Placido, A. Agostiano, M.L. Curri, R. Comparelli, A. Convertino, G. Leo V. Fakhfour, J. Y. Kim J. Brugger, R. Tommasi, T. Cassano A. Voigt, F. Reuther, G. Gruetzner, D. Mecerreyes, J. A. Alducin, N. Kehagias, V. Reboud, C. M. Sotomayor Torres
Dipartimento di Chimica, Universit  di Bari, Italy; CNR-IPCF Bari Division, Italy; CNR-ISMN Roma Division, Italy; Microsystems Laboratori,  cole Polytechnique F d rale de Lausanne (EPFL), Switzerland ;Dipartimento di Biochimica Medica, Biologia Medica e Fisica Medica, Universit  di Bari, Italy; Micro Resist Technology GmbH, Berlin, Germany; CIDETEC-Centre for Electrochemical Technologies, San Sebastian, Spain; Tyndall National Institute, Cork, Ireland
- 19:10 – 19:30 **A58: Highly persistent superparamagnetic needles obtained by controlled co assembly of iron oxide nanoparticles and polymers**
J r me Fresnais, Jean Fran ois Berret and Olivier Sandre
Mati re et Syst mes Complexes, UMR 7057 CNRS Universit  Denis Diderot Paris-VII, Paris, France; Laboratoire Liquides Ioniques et Interfaces Charg es, UMR 7612 CNRS Universit  Pierre et Marie Curie Paris-VI, Paris, France
- 19:30 – 20:00 **Concluding remarks, nomination of best student oral award winner, and farewell cocktail**

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