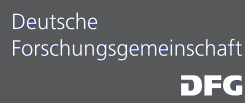




Merck KGaA



ILCC 2012 is generously supported by Deutsche Forschungsgemeinschaft

EXHIBITORS

InsteC, Inc., Boulder/USA

Linkam Scientific Instruments Ltd, Surrey/UK and
LC Vision LLC, Boulder/USA

Merck KGaA, Darmstadt/DE

Taylor & Francis, Abingdon/UK

TCI Europe N.V., Zwijndrecht/BE

TOPTICA Photonics AG, Graefelfing/DE



**Dear participants,
welcome to the 24th International Liquid
Crystal Conference in Mainz!**

We hope that you will enjoy the conference, the location and the surrounding. The mission of this biannual conference is to bring together the scientific community working in the interdisciplinary field of Liquid Crystals, or mesophases in the

broader sense. By now, liquid crystals are almost omnipresent in many, very different fields of science. But while liquid crystalline aspects become more and more important for other disciplines, where they are covered by more specialized meetings, it is of increasing importance to have a general conference that provides the forum to exchange ideas and new developments from the various aspects of Liquid Crystal research. In that spirit we have combined at this conference a core of classical LC-sessions with special symposia focusing on topics like (i) mechanical actuators, (ii) packing of organic semiconducting materials including graphene like systems and (iii) liquid crystalline systems in biology.

Certainly, LC displays are now established as the standard for flat panel displays, but other rival technologies are being developed. Therefore, research and development on LC applications is still on high demand and strongly pursued. We have tried to accommodate this aspect by various invited talks.

Because of the ever increasing amount of information that is produced and published, it becomes more and more difficult to stay up-to-date in the whole field. We believe that face to face discussions between scientists are more essential than ever and constitute a main part of such a conference. We set apart enough time for breaks, either at coffee or lunch times and the poster sessions come with beverages to foster discussion. In addition, we will altogether spend Wednesday afternoon and evening at a ship, cruising along the river Rhine, leaving ample time to enjoy the scenery, but also to discuss whatever you like with the colleagues. We have included all those activities in the conference fee allowing all participants to take part and using it for social and scientific purposes. Additional social events are offered.

Apparently, times are rather rough, economically, almost everywhere in the world. As a result, corporate sponsoring of this conference is rather low and we thank those, who nevertheless did, like the German Science Foundation, Merck KGaA, Darmstadt, Germany, the Johannes-Gutenberg University Mainz (through IRTG 1404), the Max Planck Institute for Polymer Research, Mainz, and all the exhibitors listed in this booklet. Unfortunately, we were not able to honor all the many requests from participants for financial support and several cancellations had to be faced. But with ca. 750 expected participants, more than 300 talks and ca. 550 poster presentations we are looking forward to have a scientifically strong and versatile conference.

We wish you much success and progress scientifically and have a good time in the historic town of Mainz.

Harald Pleiner
Max Planck Institute for Polymer Research

Rudolf Zentel
University of Mainz

PROGRAM

Convention Center Mainz – Watford Room

Tutorials

SUNDAY, 19.08.2012

- 09:00 – 09:45 **Tutorial Ia** Fundamentals of polarizing microscopy and interaction of light with liquid crystals
Lagerwall, J., Suwon/ROK
- 09:50 – 10:35 **Tutorial Ib** Practical optical microscopy: adjusting your microscope for optimum imaging
Lagerwall, J., Suwon/ROK
- COFFEE BREAK
- 11:00 – 11:45 **Tutorial IIa** Preparation, Characterization and Properties of Liquid Crystal Nanoparticle Composites
Scalia, G., Suwon/ROK
- 11:50 – 12:35 **Tutorial IIb** Preparation, Characterization and Properties of Liquid Crystal Nanoparticle Composites
Scalia, G., Suwon/ROK
- LUNCH
- 14:00 – 14:45 **Tutorial IIIa** Dielectric and Electrooptic Investigations of Liquid Crystals and Liquid Crystalline Nanocolloids between the Subhertz and 100 Gigahertz Region: Fundamentals
Haase, W., Darmstadt/D
- 14:50 – 15:35 **Tutorial IIIb** Dielectric and Electrooptic Investigations of Liquid Crystals and Liquid Crystalline Nanocolloids between the Subhertz and 100 Gigahertz Region: Selected Examples
Haase, W., Darmstadt/D
- COFFEE BREAK
- 16:00 – 16:45 **Tutorial IVa** Nonlinear optics of complex fluids by using the Z-Scan experimental technique: general approach
Neto, A. F, Sao Paulo/BR
- 16:50 – 17:35 **Tutorial IVb** Nonlinear optics of complex fluids by using the Z-Scan experimental technique: application to lyotropic liquid crystals and biological fluids
Neto, A. F, Sao Paulo/BR

SUNDAY, 19.08.2012

14:00 – 20:00 **Registration**

Foyer Entrance

SUNDAY, 19.08.2012

18:00 – 21:00 **Welcome Reception**

North Foyer

LECTURES

Convention Center Mainz – Lecture Hall R

Plenary Lectures

MONDAY, 20.08.2012

- 08:50 – 09:25 **New Materials for Polymer Stabilized LCD Modes**
Wittek, M., Darmstadt/D

TUESDAY, 21.08.2012

- 08:30 – 09:10 **Graphenes and their Self-Organization**
Müllen, K., Mainz/D

WEDNESDAY, 22.08.2012

- 08:30 – 09:10 **Mesomorphic Metamaterials**
Palffy-Muhoray, P., Kent/USA

THURSDAY, 23.08.2012

- 08:30 – 09:10 **Molecular-Level Interfacial Modification for Organic Electronics and Optoelectronics**
Lee, S.-D., Seoul/ROK, Kim, M.-H., Seoul/ROK, Keum, C.-M., Seoul/ROK, Bae, J.-H., Seoul/ROK

FRIDAY, 24.08.2012

- 08:30 – 09:10 **Nematic Colloids: Topology and Photonics**
Musevic, I., Ljubljana/SLO

SPECIAL SYMPOSIA

THURSDAY, 23.08.2012

Lecture Hall R

17. Shape-memory elastomers (a)

Coordinators:

Marc Behl, Centre for Biomaterial Development, Berlin-Teltow, Germany
 Andreas Lendlein, Centre for Biomaterial Development, Berlin-Teltow, Germany
 Rudolf Zentel, University of Mainz, Germany

- 10:45 – 11:15 **INVITED LECTURE**
Polymeric Shape Memory Materials and Actuators
Huang, W. M., Singapore/SGP
- 11:15 – 11:45 **INVITED LECTURE**
Photomobile Polymer Materials – Structures and Functions
Ikeda, T., Tokyo/J, Ube, T., Tokyo/J, Naka, Y., Yokohama/J, Tomita, A., Yokohama/J, Yamada, M., Yokohama/J, Mamiya, J., Yokohama/J, Shishido, A., Yokohama/J
- 11:45 – 12:00 **Multifunctional Shape-Memory Polymers**
Lendlein, A., Teltow/D, Behl, M., Teltow/D, Kratz, K., Teltow/D
- 12:00 – 12:15 **Electromechanical effect of chiral smectic liquid crystal elastomers**
Na, Y. H., Daejeon/ROK, Aburaya, Y., Sapporo/J, Hiraoka, K., Atsugi/J, Orihara, H., Sapporo/J
- 12:15 – 12:30 **Designing LCE Microactuators using Microfluidics**
Fleischmann, E.-K., Mainz/D, Liang, H.-L., Mainz/D, Lagerwall, J., Suwon/ROK, Zentel, R., Mainz/D

FRIDAY, 24.08.2012

Lecture Hall D

17. Shape-memory elastomers (b)

- 11:15 – 11:30 **Dual and Triple-Shape Properties of Poly(ω -pentadecalactone)-based Polymer Networks**
Behl, M., Teltow/D, Zotzmann, J., Teltow/D, Lendlein, A., Teltow/D
- 11:30 – 12:00 **INVITED LECTURE**
Temperature memory of polymer actuators
Poulin, P., Pessac/F, Grillard, F., Pessac/F, Mercader, C., Pessac/F, Miaudet, P., Pessac/F, Zakri, C., Pessac/F
- 12:00 – 12:30 **INVITED LECTURE**
Photo-actuation in liquid crystal elastomers and orientationally ordered nanocomposites
Terentjev, E. M., Cambridge/GB, Marshall, J. E., Cambridge/GB

- 12:30 – 13:00 **INVITED LECTURE**
Optical and Thermal Shape Memory in Glassy Liquid Crystalline Polymer Networks
White, T. J., Dayton/USA, Lee, K. M., Dayton/USA, Koerner, H., Dayton/USA, Vaia, R. A., Dayton/USA, Bunning, T. J., Dayton/USA

MONDAY, 20.08.2012

Lecture Hall D

18. Self-organization in optoelectronic materials (a)

Coordinated jointly with IRTG 1404 (Mainz/D – Seoul/ROK) by:
Kookheon Char, Seoul National University, Seoul, Rep. of Korea
Mary O'Neill, University of Hull, United Kingdom
Rudolf Zentel, University of Mainz, Germany

- 10:45 – 11:15 **INVITED LECTURE**
Relationship between supramolecular assembly and charge-carrier mobility in discotic liquid crystals
Andrienko, D., Mainz/D
- 11:15 – 11:45 **INVITED LECTURE**
Liquid Crystals as an Organic Semiconductor – from materials to devices
Hanna, J.-I., Yokohama/J
- 11:45 – 12:00 **Control over the Charge Carrier Transport in Discotic Semiconductors by Chemical Design and Processing**
Pisula, W., Mainz/D, Müllen, K., Mainz/D
- 12:00 – 12:15 **Liquid Crystal Homo and Alternating (Co)polymers Based on pi-Conjugated Backbone for Organic Electronics**
Mathevet, F., Paris/F, Tahar-Djebbar, I., Paris/F, Zeng, D., Paris/F, Lacaze, E., Paris/F, Heinrich, B., Strasbourg/F, Donnio, B., Strasbourg/F, Guillon, D., Strasbourg/F, Brinkmann, M., Strasbourg/F, Kreher, D., Paris/F, Attias, A. J., Paris/F
- 12:15 – 12:30 **Independent Control over Donor/Acceptor Properties and Electron/Hole Conduction in Columnar Mesophases by Molecular Design**
Eichhorn, S. H., Windsor/CDN
- 14:15 – 14:30 **Miscibility and Phase Separation in Columnar Mesophase of a Binary Semiconducting System of a Metal-free Non-peripheral Phthalocyanine Mesogen and its Zn Complex**
Shimizu, Y., Ikeda/J, Matsuda, Y., Ikeda/J, Miyamoto, K., Ikeda/J, Miyake, Y., Ikeda/J, Nekelson, F., Ikeda/J, Yoshida, H., Suita/J, Fujii, A., Suita/J, Ozaki, M., Suita/J

LECTURES

- 14:30 – 15:00 **INVITED LECTURE**
Tailored Assembly of Graphitic Carbon Materials for Optoelectronics
Kim, S. O., Daejeon/ROK
- 15:30 – 16:00 **INVITED LECTURE**
Efficient quantum-dot light-emitting diodes for full-color displays
Lee, C., Seoul/ROK
- 16:00 – 16:30 **INVITED LECTURE**
An Orthogonal Solution
Ober, C. K., Ithaca/USA, Newby, C., Ithaca/USA, Lee, J.-K., Incheon/ROK
- 16:30 – 16:45 **Controlling the nanostructures of conjugated polymers by olefin metathesis catalysis**
Choi, T.-L., Seoul/ROK
- 16:45 – 17:00 **Induced in-plane orientation of poly(3-hexylthiophene) chains by controlled crystallization**
Fischer, F. S. U., Stuttgart/D, Tremel, K., Stuttgart/D, Brinkmann, M., Strasbourg/F, Crossland, E. J. C., Oxford/UK, Ludwigs, S., Stuttgart/D

TUESDAY, 21.08.2012

Lecture Hall R

18. Self-organization in optoelectronic materials (b)

- 09:15 – 09:45 **INVITED LECTURE**
Semiconducting Polymers for Transistors and Solar Cells
McCulloch, I., London/GB
- 09:45 – 10:00 **Soft Imprint of Self-Assembled Multilayers for Polymer Solar Cells**
Chou, T. R., Taipei/RC, Huang, L. C., Taipei/RC, Liu, H. W., Taipei/RC, Liang, C. W., Taipei/RC, Wang, L. Y., Taipei/RC, Chao, C. Y., Taipei/RC
- 10:00 – 10:15 **The effective molecular design for high carrier mobility in calamitic liquid crystals**
Takayashiki, Y., Yokohama/J, Lino, H., Yokohama/J, Ohno, A., Yokohama/J, Hanna, J., Yokohama/J
- 10:45 – 11:00 **Nondispersive Bipolar Carrier Transport Properties in Multidomained Discotic Liquid Crystal**
Chen, L.-Y., Kaohsiung/PRC, Chien, F.-S., Kaohsiung/PRC, Chiang, C.-Y., Kaohsiung/PRC, Zheng, W.-J., Kaohsiung/PRC, Ong, C. W., Kaohsiung/PRC
- 11:00 – 11:15 **Bulk Hetero-junction Solar Cells with Smectic Liquid Crystalline Material**
Nakano, K., Yokohama/J, Iino, H., Yokohama/J, Takayashiki, Y., Yokohama/J, Usui, T., Yokohama/J

LECTURES

- 11:15 – 11:45 **INVITED LECTURE**
Photoconductive Liquid Crystalline Radicals
Kaszynski, P., Nashville/USA, Jankowiak, A., Nashville/USA, Pocięcha, D., Warsaw/PL, Monobe, H., Osaka/J, Szczytko, J., Warsaw/PL
- 11:45 – 12:15 **INVITED LECTURE**
Semiconducting nematic mesogens and reactive mesogens
O'Neill, M., Hull/GB, Al Khalifah, M. S., Hull/GB, Kitney, S. P., Hull/GB, Lei, C., Hull/GB, Liedtke, A., Hull/GB, Myers, S. A., Hull/GB, Kelly, S. M., Hull/GB
- 12:15 – 12:30 **High FET mobility and high thermal stability in solution-processed liquid crystals**
Lino, H., Yokohama/J, Usui, T., Yokohama/J, Kobori, T., Yokohama/J, Hanna, J., Yokohama/J

Lecture Hall C

18. Self-organization in optoelectronic materials (c)

- 14:00 – 14:15 **Controlling the phase behaviour and the semiconducting properties of extended aromatic systems**
Lodato, F., Hull/GB, Wright, M., Hull/GB, Tamba, M.-G., Hull/GB, O'Neill, M., Hull/GB, Kelly, S. M., Hull/GB, Mehl, G. H., Hull/GB
- 14:15 – 14:30 **New n-type liquid-crystalline perylene tetracarboxylic bisimide derivatives**
Funahashi, M., Takamatsu/J
- 14:30 – 15:00 **INVITED LECTURE**
Metallic Nanoparticles and Quantum Dots Containing Patterns by Two-Photon Stereolithography
Lee, K.-S., Daejeon/ROK, Prabhakaran, P., Daejeon/ROK, Jang, K. K., Daejeon/ROK, Park, S.-Y., Daejeon/ROK, Jeon, S.-M., Daejeon/ROK, Chandran, D., Daejeon/ROK

THURSDAY, 23.08.2012

Lecture Hall B

19. Liquid crystal aspects of active media (a)

Coordinators:

*Helmut R. Brand, University of Bayreuth, Germany**Harald Pleiner, MPI for Polymer Research, Mainz, Germany*

- 09:15 – 09:30 **Jet-like flow of active nematics**
Mottram, N. J., Glasgow/GB

- PII-165 **Experiment for illustrating the anisotropy in refractive index of liquid crystals in school**
Pavlin, J., Ljubljana/SLO, Skarabot, M., Ljubljana/SLO, Vaupotic, N., Maribor/SLO, Cepic, M., Ljubljana/SLO
- PII-166 **In-plane liquid crystalline molecules behaviour presented by the mechanical model**
Susman, K., Ljubljana/SLO, Cepic, M., Ljubljana/SLO
- PII-167 **Making Liquid Crystals simple to school going students**
Khandelwal, A., Muzaffarnagar/IND
- PII-168 **Conoscopy of liquid crystals in the classroom**
Pecar, M., Ljubljana/SLO, Cepic, M., Ljubljana/SLO
- PII-169 **High school projects for lessons on liquid crystals**
Belyaev, V. V., Moscow/RUS, Sinyavina, A. A., Moscow/RUS, Grudinina, V. V., Moscow/RUS, Zverev, N. V., Moscow/RUS, Spakhov, A. A., Moscow/RUS

SPECIAL SYMPOSIA

17. Shape-memory elastomers

- PIII-181 **Tailoring Mesogenic and Mechanical Properties of Nematic Main-Chain Liquid Crystalline Polymers and Elastomers**
Melchert, C., Teltow/D, Behl, M., Teltow/D, Lendlein, A., Teltow/D

18. Self-organization in opto-electronic materials

- PII-170 **Ultrathin Films of Homeotropically Aligned Discotic Columnar Liquid Crystals for Photovoltaic Applications**
Grelet, E., Pessac/F, Brunet, T., Pessac/F, Thiebaut, O., Pessac/F, Bock, H., Pessac/F
- PII-171 **The Effect Patterning of PEDOT:PSS Films via the Rubbing Method in Polymer Solar Cells**
Huang, C. C., Taipei/RC, Huang, L. C., Taipei/RC, Liu, H. W., Taipei/RC, Hsieh, J., Taipei/RC, Chou, T. R., Taipei/RC, Chiu, W. Y., Taipei/RC, Wang, L. Y., Taipei/RC, Chao, C. Y., Taipei/RC
- PII-172 **Liquid crystalline and Charge transport behaviors of non-peripheral-Octahexylphthalocyanine/PCBM blends**
Shimizu, Y., Osaka/J, Hori, T., Osaka/J, Miyake, Y., Osaka/J, Fukuoka, N., Nekelson, F. Osaka/J, Osaka/J, Miyamoto, K., Osaka/J, Hayashi, T., Osaka/J, Yoshida, H., Osaka/J, Fujii, A., Osaka/J, Ozaki, M., Osaka/J
- PII-173 **Enhancement of charge injection at the interface between electrode and ferroelectric liquid crystal and its application to light-emitting diodes**
Higuchi, M., Yokohama/J, Hoshi, S., Yokohama/J, Kida, T., Yokohama/J, Takayashiki, Y., Yokohama/J, Iino, H., Yokohama/J, Hanna, J.-I., Yokohama/J

- PII-174 **Effect of lateral chain branching on phase behavior and on structure of quaterthiophene multipods**
Shcherbina, M. A., Moscow/RUS, Anokhin, D.V., Moscow/RUS, Bakirov, A. V., Moscow/RUS, Luponosov, Y. N., Moscow/RUS, Ponomarenko, S. A., Moscow/RUS, Ivanov, D. A., Mulhouse/F, Chvalun, S. N., Moscow/RUS
- PII-175 **Energetic and structural disorders in carrier transport of smectic liquid crystal**
Ohno, A., Yokohama/J, Hanna, J., Yokohama/J
- PII-176 **Blue Light-Emitting Carbazole Derivatives with Triphenylene Discogen and Cholesterol Moiety**
Hu, P., Chengdu/PRC, Liu, Z.-J., Chengdu/PRC, Xiao, B., Chengdu/PRC, Wang, Y.-H., Chengdu/PRC, Wang, B.-Q., Chengdu/PRC, Zhao, K., Chengdu/PRC
- PII-177 **Incorporation of Inorganic Nanoparticles into a Liquid Crystalline Semiconducting Matrix**
zur Borg, L., Mainz/D, Zentel, R., Mainz/D
- PII-178 **The synthesis of brush polymers containing conjugated backbone via cyclopolymerization and their conformational analysis**
Kang, E.-H., Seoul/ROK, Lee, I.-H., Seoul/ROK, Choi, T.-L., Seoul/ROK
- PII-179 **Synthesis of Dendronized Polymer via ROMP and Single Chain Conformation Characterization**
Kim, K. O., Seoul/ROK, Choi, T.-L., Seoul/ROK
- PII-180 **Static properties of ring polymer melts in the confined environment: A Molecular dynamics simulation study**
Lee, E., Seoul/ROK, Lee, W. B., Seoul/ROK, Kremer, K., Seoul/ROK, Jung, Y. J., Seoul/ROK
- PII-181 **High efficiency and high photo-stability zinc-phthalocyanine based planar heterojunction solar cells with a double interfacial layer**
Kim, T.-M., Seoul/ROK, Kim, J. W., Seoul/ROK, Shim, H. S., Seoul/ROK, Kim, J.-J., Seoul/ROK
- PII-182 **Effects of Different Metal Oxide Electron Transport Layers in inverted Quantum Dot Light Emitting Diodes**
Park, M., Seoul/ROK, Lee, D., Seoul/ROK, Lim, J., Seoul/ROK, Char, K., Seoul/ROK, Lee, S., Seoul/ROK, Lee, C., Seoul/ROK
- PII-183 **Atom Transfer Radical Polymerization of Reactive Polymer Brushes on ITO for Optoelectronic Applications**
Lee, Y., Seoul/ROK, Hanif, S., Mainz/D, Theato, P., Hamburg/D, Pyun, J., Arizona/USA, Char, K., Seoul/ROK
- PII-184 **Mesoporous Titania Nanostructures Templated by Self-Assembled Block Copolymers for Photovoltaic Applications**
Kim, H., Seoul/ROK, Kim, J.-H., Seoul/ROK, Sohn, B.-H., Seoul/ROK

- P11-185 **Tunable Nanopatterning of Graphene Materials by Single-Layered Films of Diblock Copolymer Micelles**
Kim, S.-S., Seoul/ROK, Sohn, B.-H., Seoul/ROK
- P11-186 **Liquid Crystalline Materials for Organic Field-Effect Transistors**
Kandath Madathil, P., Daejeon/ROK, Chandran, D., Daejeon/ROK, Koh, Y.-H., Daejeon/ROK, Kim, T.-D., Daejeon/ROK, Lee, K.-S., Daejeon/ROK
- P11-187 **Synthesis and Characterization of New Low Band-Gap Polymers for Organic Thin film Transistor and Organic Photovoltaic cells**
Lee, K.-S., Daejeon/ROK, Ko, Y.-H., Daejeon/ROK, Kim, T.-D., Daejeon/ROK, Laquai, F., Mainz/D, Oh, H. S., New York/USA, Prasad, P. N., New York/USA
- P11-188 **A computational study of the dynamic heterogeneity in an ionic liquid system: The effect of asymmetry in cation charge distribution**
Kim, S., Seoul/ROK, Park, S.-W., Seoul/ROK, Jung, Y. J., Seoul/ROK
- P11-189 **Stabilisation of 2D colloidal crystals assembled in liquid crystalline matrices**
Mirri, G., Nijmegen/NL, Kouwer, P., Nijmegen/NL, Musevic, I., Ljubljana/SLO, Rowan, A. E., Nijmegen/NL
- P11-190 **Smectogenic Liquid Crystals for Photovoltaic cells**
Soto Bustamante, E. A., Santiago/RCH, Meneses-Franco, A., Santiago/RCH, Romero-Hasler, P., Santiago/RCH, Fierro-Armijo, A. E., Santiago/RCH, Martinez-Miranda, L., Maryland/USA

Sunday, August 19, 2012

18:00 – 21:00

A **Get-together** (welcome reception) will take place in the foyer of the Rheingoldhalle. Snacks with beverages and drinks will be served.



Wednesday, August 22, 2012

13:30

In the middle of the scientific program, on Wednesday, August 22, we will have the traditional **Conference Excursion including the Conference Dinner**. We will explore a good part of the Unesco world heritage, Upper Middle-Rhine Valley.



Our special boat will wait for us at the pier in front of the Rheingoldhalle and all participants and accompanying persons can start to board at about 1pm. The departure time is 1:30 pm (13:30h) sharp – the boat will not wait for anybody. Be aware that the temperatures felt on the boat are lower than the real ones, and usually it is cooling off in the evening, so bring a jacket or something similar with you. On a sunny day, which we hope for, the combination of sun, wind, and water, rapidly leads to a sun burn, if no precautions are taken (a hat is often recommended). We will post a weather forecast for Wednesday on the message board.

The MS RheinEnergie of the Köln-Düsseldorfer (KD) shipping company is a large boat with interior and exterior decks on different levels. The Rhine is a small river (on a global perspective) running smoothly, so there is no risk of becoming seasick.

The light lunch of this day will already be taken on board right after the departure. During the trip there is the possibility for having coffee and beverages, and light snacks or cake all the time. When entering the boat (with your batch!) you will get some vouchers, which you can redeem on the boat during the afternoon. The conference dinner (included in the conference registration), a three-course buffet, will be offered in the evening. We will return late, but certainly before 10 pm.