

F1.1 (U. Lemmer / H. Kalt)

- [F1.1:1] * ‡ H.J. Zhou, J. Fallert, J. Sartor, R.J.B. Dietz, C. Klingshirn, H. Kalt, D. Weissenberger, D. Gerthsen, H.B. Zeng, and W.P. Cai, *Ordered n-type ZnO nanorod arrays*, [Appl. Phys. Lett. **92**, 132112 \(2008\)](#)
- [F1.1:2] ‡ H.Zeng, W. Cai, P. Liu, X. Xu, H. Zhou, C. Klingshirn, and H. Kalt, *ZnO-based hollow nanoparticles by selective etching: elimination and reconstruction of metal-semiconductor interface, improvement of blue emission and photocatalysis*, [ACS Nano **2**, 1661 \(2008\)](#)
- [F1.1:3] A. Colsmann, F. Stenzel, G. Balthasar, H. Do, and U. Lemmer, *Plasma patterning of Poly(3,4-ethylenedioxythiophene): Poly(styrenesulfonate) anodes for efficient polymer solar cells*, [Thin Solid Films **517**, 1750 \(2009\)](#)
- [F1.1:4] H. Do, M. Reinhard, H. Vogeler, A. Pütz, M.F.G. Klein, W. Schabel, A. Colsmann, and U. Lemmer, *Polymeric anodes from poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) for 3.5% efficient organic solar cells*, [Thin Solid Films **517**, 5900 \(2009\)](#)
- [F1.1:5] ‡ R. Steim, S.A. Choulis, P. Schilinsky, U. Lemmer, and C.J. Brabec, *Formation and Impact of Hot-Spots on the Performance of Organic Photovoltaic Cells*, [Appl. Phys. Lett. **94**, 043304 \(2009\)](#)
- [F1.1:6] * B. Schmidt-Hansberg, H. Do, A. Colsmann, U. Lemmer, and W. Schabel, *Drying of thin film polymer solar cells*, [Eur. Phys. J. Special Topics **166**, 49 \(2009\)](#)
- [F1.1:7] * B. Schmidt-Hansberg, M. Klein, K. Peters, F. Buss, J. Pfeifer, S. Walheim, A. Colsmann, U. Lemmer, P. Scharfer, and W. Schabel, *In situ monitoring the drying kinetics of knife coated polymer-fullerene films for organic solar cells*, [J. Appl. Phys. **106**, 124501 \(2009\)](#)
- [F1.1:8] * D. Weissenberger, D. Gerthsen, A. Reiser, G.M. Prinz, M. Feneberg, K. Thonke, H. Zhou, J. Sartor, J. Fallert, C. Klingshirn, and H. Kalt, *Influence of the measurement procedure on the field-effect dependent conductivity of ZnO nanorods*, [Appl. Phys. Lett. **94**, 042107 \(2009\)](#)
- [F1.1:9] * J. Sartor, F. Maier-Flaig, J. Conradt, J. Fallert, H. Kalt, D. Weissenberger, and D. Gerthsen, *Modifying growth conditions of ZnO nanorods for solar cell applications*, [phys. stat. sol. \(c\) **7**, 1583 \(2010\)](#)
- [F1.1:10] F. Nickel, A. Puetz, M. Reinhard, H. Do, C. Kayser, A. Colsmann, and U. Lemmer, *Cathodes comprising highly conductive poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) for semi-transparent polymer solar cells*, [Organic Electronics **11**, 535 \(2010\)](#)
- [F1.1:11] S. Kettlitz, S. Valouch, and U. Lemmer, *Organic solar cell degradation probed by the nanosecond photoresponse*, [Appl. Phys. A **99**, 805 \(2010\)](#)
- [F1.1:12] F. Nickel, A. Puetz, M. Reinhard, H. Do, C. Kayser, A. Colsmann, and U. Lemmer, *Cathodes Comprising Highly Conductive Poly(3,4-Ethylenedioxythiophene): Poly(Styrenesulfonate) for Semi-Transparent Polymer Solar Cells*, [Organic Electronics **11**, 535 \(2010\)](#)
- [F1.1:13] S. Kettlitz, S. Valouch, and U. Lemmer, *Organic solar cell degradation probed by the nanosecond photoresponse*, [Appl. Phys. A **99**, 805 \(2010\)](#)
- [F1.1:14] S. Züfle, N. Christ, S.W. Kettlitz, S. Valouch, and U. Lemmer, *Influence of temperature-dependent mobilities on the nanosecond response of organic solar cells and photodetectors*, [Appl. Phys. Lett. **97**, 063306 \(2010\)](#)
- [F1.1:15] *C. Klingshirn, J. Fallert, H. Zhou, J. Sartor, C. Thiele, F. Maier-Flaig, and H. Kalt, *65 years of ZnO research - old and very recent results*, [phys. stat. sol. \(b\) **247**, 1424 \(2010\)](#)

- [F1.1:16] A. Puetz, T. Stubhan, M. Reinhard, O. Loesch, E. Hammarberg, S. Wolf, C. Feldmann, H. Kalt, A. Colsmann, and U. Lemmer, *Organic solar cells incorporating buffer layers from indium doped zinc oxide nanoparticles*, [Sol. En. Mat. Sol. Cells](#) **95**, 579 (2011)
- [F1.1:17] *J. Conradt, J. Sartor, C. Thiele, F. Maier-Flaig, J. Fallert, H. Kalt, R. Schneider, M. Fotouhi, P. Pfundstein, V. Zibat, D. Gerthsen, *Catalyst-Free Growth of Zinc Oxide Nanorod Arrays on Sputtered Aluminum-Doped Zinc Oxide for Photovoltaic Applications*, *J. Phys. Chem. C* **115**, 3539 (2011); DOI: 10.1021/jp111824d
- [F1.1:18] * M. Pfaff, E. Müller, M.F.G. Klein, A. Colsmann, U. Lemmer, V. Krzyzaneck, R. Reichelt, and D. Gerthsen, *Low-energy electron scattering in carbon-based materials analyzed by scanning transmission electron microscopy and its application to sample thickness determination*, [J. Microscopy](#) **243**, 31 (2011)
- [F1.1:19] * M. Reinhard, J. Hanisch, Z. Zhang, E. Ahlswede, A. Colsmann, and U. Lemmer, *Inverted organic solar cells comprising a solution-processed cesium fluoride interlayer*, *Appl. Phys. Lett.* **98**, 053303 (2011)
- [F1.1:20] * B. Schmidt-Hansberg, M. Baunach, J. Krenn, S. Walheim, U. Lemmer, P. Scharfer, and W. Schabel, *Spatially resolved drying kinetics of multi-component solution cast films for organic electronics*, *Chemical and Process Engineering* **50**, 509 (2011)
- [F1.1:21] A. Colsmann, A. Puetz, A. Bauer, J. Hanisch, E. Ahlswede, and U. Lemmer, *Efficient semi-transparent organic solar cells with good transparency color perception and rendering properties*, *Adv. Energy Mat.* **1**, 599 (2011).
- [F1.1:22] ‡ M. Sanyal, B. Schmidt-Hansberg, M.F.G. Klein, A. Colsmann, C. Munuera, A. Vorobiev, U. Lemmer, W. Schabel, H. Dosch, and E. Barrena, *In-situ x-ray study of drying temperature influence on the structural evolution of bulk heterojunction polymer-fullerene solar cells processed by doctor-blading*, *Adv. Energy Mat.* **1**, 363 (2011).
- [F1.1:23] ‡ M. Sanyal, B. Schmidt-Hansberg, M.F.G. Klein, C. Munuera, A. Vorobiev, A. Colsmann, U. Lemmer, W. Schabel, H. Dosch, and E. Barrena, *Effect of Photovoltaic Polymer/Fullerene Blend Composition Ratio on Microstructure Evolution during Film Solidification Investigated in Real Time by X-ray Diffraction*, *Macromolecules* **44**, 3795 (2011)
- [F1.1:24] N. Christ, S.W. Kettlitz, S. Züfle, S. Valouch, and U. Lemmer, *Nanosecond response of organic solar cells and photodiodes: Role of trap states*, *Phys. Rev. B* **83**, 195211 (2011)
- [F1.1:25] ‡ J. Yu, K.H. Lee, Y. Zhang, M.F.G. Klein, A. Colsmann, U. Lemmer, P.L. Burn, S.-C. Lo, and P. Meredith, *A dendronised polymer for bulk heterojunction solar cells*, *Polym. Chem.* **2**, 266 (2011)
- [F1.1:26] ‡ F.M. Pasker, M.F.G. Klein, M. Sanyal, E. Barrena, U. Lemmer, A. Colsmann, and S. Höger, *Photovoltaic Response to Structural Modifications on a Series of Conjugated Polymers Based on 2-Aryl-2H-benzotriazoles*, *Journ. of Polymer Sci. Part A: Polymer Chem.* **49**, 5001 (2011)
- [F1.1:27] ‡* B. Schmidt-Hansberg, M. Sanyal, M. Klein, M. Pfaff, N. Schnabel, S. Jaiser, Stefan, A. Vorobiev, E. Müller, A. Colsmann, P. Scharfer, D. Gerthsen, U. Lemmer, E. Barrena, and W. Schabel, *Moving through the phase diagram: morphology formation in solution cast polymer-fullerene-blend films for organic solar cells*, *ACS Nano* **5**, 8579 (2011)
- [F1.1:28] ‡ B. Schmidt-Hansberg, M. Sanyal, N. Grossiord, Y. Galagan, M. Baunach, M. F.G. Klein, A. Colsmann, P. Scharfer, Uli Lemmer, H. Dosch, J. Michels, E.

Barrena, and W. Schabel, *Investigation of non-halogenated solvent mixtures for high throughput fabrication of polymer–fullerene solar cells*, *Solar Energy Materials and Solar Cells* **96** 195 (2011).

- [F1.1:29] ‡ J.D. Yuen, R. Kumar, J. Seifert, S. Valouch, D. Zakhidov, D. Moses, U. Lemmer, A.J. Heeger, and F. Wudl, *Observations of PDDTT Subject to Thermal Treatment: Correlation between Performance and Order*, *J. Am. Chem. Soc.* **133**, 19602 (2011)
- [F1.1:30] * S. Valouch, C. Hönes, S.W. Kettlitz, N. Christ, H. Do, M.F.G. Klein, H. Kalt, A. Colsmann, and U. Lemmer, *Solution processed small molecule organic blocking layers for low dark current polymer photodiodes*, *Org. Electron.* **13**, 2727 (2012)
- [F1.1:31] * M.F.G. Klein, M. Pfaff, E. Müller, J. Czolk, M. Reinhard, S. Valouch, U. Lemmer, A. Colsmann, and D. Gerthsen, *The impact of the nano-morphology on the optoelectronic device performance in poly-hexylselenophene solar cells*, *J. Polymer Science: Polymer Physics* **50**, 198 (2012)
- [F1.1:32] * M. Pfaff, M.F.G Klein, E. Müller, P. Müller, A. Colsmann, U. Lemmer, and D. Gerthsen, *Nanomorphology of P3HT:PCBM-based absorber layers of organic solar cells after different processing conditions analyzed by low-energy scanning transmission electron microscopy*, *Microsc. Microanal.* **18**, 1380 (2012)
- [F1.1:33] M. Reinhard, R. Eckstein, A. Slobodskyy, U. Lemmer, and A. Colsmann, *Solution-processed polymer - silver nanowire top electrodes for inverted semi-transparent solar cells*, *Org. Electron.* **14**, 273 (2012)
- [F1.1:34] J. Czolk, A. Puetz, D. Kutsarov, M. Reinhard, U. Lemmer, A. Colsmann, *Inverted Semi-transparent Polymer Solar Cells with Transparency Color Rendering Indices approaching 100*, *Adv. Energy Mater.*, doi: 10.1002/aenm.201200532
- [F1.1:35] ‡ T.F. Schulze, J. Czolk, Y.-Y. Cheng, B. Fückel, R.W. MacQueen, T. Khoury, M. J. Crossley, B. Stannowski, K. Lips, U. Lemmer, A. Colsmann, and T.W. Schmidt, *Efficiency Enhancement of Organic and Thin-Film Silicon Solar Cells with Photochemical Upconversion*, *J. Phys. Chem. C* **116**, 22794 (2012)
- [F1.1:36] * M. Reinhard, J. Conradt, M. Braun, A. Colsmann, U. Lemmer, and H. Kalt, *Zinc oxide nanorod arrays hydrothermally grown on a highly conductive polymer for inverted polymer solar cells*, *Synth. Met.* **162**, 1582 (2012)
- [F1.1:37] F. Nickel, M. Reinhard, Z. Zhang, A. Pütz, S. Kettlitz, U. Lemmer, and A. Colsmann, *Solution processed sodium chloride interlayers for efficient electron extraction from polymer solar cells*, *Appl. Phys. Lett.* **101**, 053309 (2012)
- [F1.1:38] J. Mescher, N. Christ, S. Kettlitz, A. Colsmann, and U. Lemmer, *Influence of the spatial photocarrier generation profile on the performance of organic solar cells*, *Appl. Phys. Lett.* **101**, 073301 (2012)
- [F1.1:39] * A. Puetz, F. Steiner, M. Reinhard, J. Mescher, N. Christ, D. Kutsarov, H. Kalt, U. Lemmer, and A. Colsmann, *Solution processable, precursor based zinc oxide buffer layers for 4.5% efficient organic tandem solar cells*, *Org. Electron.* **13**, 2696 (2012)
- [F1.1:40] F. Nickel, M.F.G. Klein, C. Sprau, P. Kapetana, N. Christ, X. Liu, S. Klinkhammer, U. Lemmer, and A. Colsmann, *Layer thickness optimization by spatially resolved photocurrent mapping of organic solar cells comprising wedge-shaped absorber layers*, *Sol. Energy Mat. Sol. Cells* **104**, 18 (2012)
- [F1.1:41] ‡ A. Colsmann, M. Reinhard, T.-H. Kwon, C. Kayser, F. Nickel, J. Czolk, U. Lemmer, N. Clark, J. Jasieniak, A.B. Holmes, and D.D.J. Jones, *Inverted semi-transparent organic solar cells with spray coated, surfactant-free polymer top-electrodes*, *Sol. Energy Mat. Sol. Cells* **98**, 118 (2012)

- [F1.1:42] M.F.G. Klein, F. Pasker, H. Wettach, I. Gadaczek, T. Bredow, P. Zilkens, P. Voehringer, U. Lemmer, S. Höger, and A. Colsmann, *Oligomers comprising 2-phenyl-2H-benzotriazole building blocks for solution processible organic photovoltaic devices*, J. Phys. Chem. C **116**, 16358 (2012)
- [F1.1:43] ‡ B. Schmidt-Hansberg, M.F.G. Klein, M. Sanyal, F. Buss, G.Q.G. de Medeiros, C. Munuera, A. Vorobiev, A. Colsmann, P. Scharfer, U. Lemmer, E. Barrena, and W. Schabel, *Structure formation in low-bandgap polymer:fullerene solar cell blends in the course of solvent evaporation*, Macromolecules **45**, 7948 (2012)
- [F1.1:44] * A. Luz, J. Conradt, M. Wolff, H. Kalt, C. Feldmann, *p-DSSCs with BiOCl and BiOBr Semiconductor and Polybromide Electrolyte*, Solid State Sciences **19**, 172 (2013)

Invited Talks at International Conferences

- U. Lemmer et al., Nanostructure and electronic transport in organic solar cells, NIM Winterschool Kirchberg, Austria, March 2013
- A. Colsmann, F. Nickel, C. Sprau, U. Lemmer, *Spatially resolved photocurrent measurements of solution processed, wedge-shaped functional layers for a fast and material-saving layer optimization in polymer solar cells*, IOESC, Coolum Beach (AU), 2012
- A. Colsmann, A. Pütz, U. Lemmer, *Solution processible organic tandem solar cells*, ILACOS, Dresden (D), 2012
- A. Colsmann, Keynote lecture: *Solution processed semi-transparent and tandem organic solar cells*, Winterschool on Organic Electronics, Heidelberg (D), 2012
- A. Colsmann et al., *Semi-transparent polymer photovoltaic devices with good transparency color perception and color rendering properties*, SPIE Photonics 2011, San Diego, USA, August 2011
- U. Lemmer et al., *Polymeric Solar Cells with Improved Properties*, 2ⁿ International Conference and Exhibition on Organic Photovoltaics, Würzburg, Germany, 2011
- A. Colsmann, A. Pütz, F. Nickel, M. Reinhard, U. Lemmer, *Semi-transparent polymer solar cells*, ECIO Cambridge (UK), 2010
- C. Klingshirn, J. Fallert, J. Sartor, and H. Kalt, *65 years of ZnO research - old and very recent results*, review lecture at 14th Internatl. Conf. on II-VI Compounds (II-VI 2009), St. Petersburg (Russia), Aug. 2009
- A. Colsmann, D. Kohler, J. Silbereisen, J. Junge, C. Kayser, U. Lemmer, *Charge Transport Layers for Organic Solar Cells*, Trends in Organic Electronics and Hybrid Photovoltaics, Eforie Nord (RO), 2008
- U. Lemmer et al., *Modelling and simulation of organic optoelectronic devices*, SAOT Workshop on Computational Optics "Electromagnetic Field Simulation and its Application", Erlangen, Germany, May 2008
- L.M. Kukreja, P. Misra, J. Fallert, J. Sartor, H. Kalt and C. Klingshirn, *Nano-ZnO in Photonics Landscape*, IEEE International Photonics Global Conference, Singapore, Dec. 2008
- K. Thonke, A. Reiser, M. Schirra, M. Feneberg, G.M. Prinz, T. Röder, R. Sauer, J. Fallert, H. Kalt, S. Gsell, M. Schreck, B. Stritzker, *Zinc Oxide Nanostructures: Optical resonators and lasing*, German Physical Society Spring Meeting, Berlin, Feb. 2008
- U. Lemmer et al., *Organic nanophotonic devices*, International Summer School 2007, Thin Solid Films for OLEDs and Optoelectronic Applications, Krutyn, Poland, June 2007

U. Lemmer et al., *Ultrafast Dynamics of Charge Carrier Photogeneration and Geminate Recombination in Conjugated Polymer Solar Cells*, International Conference on Amorphous and Nanocrystalline Semiconductors (ICANS 22), Breckenridge, CO, USA, August 2007

C. Klingshirn, J. Fallert, H. Zhou, H. Kalt, *Optical Properties of Semiconductors at the fundamental absorption edge*, Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured Materials - PLD, Rajkot (Indien), October 2007

C. Klingshirn, J. Fallert, H. Zhou, H. Kalt, *Optical Properties of ZnO Bulk Samples and Nano-Structures*, Conference on New Horizons in Theoretical and Experimental Physics - NHTEP, Cochin (India), October 2007

U. Lemmer et al., *Organic Solar Cells*, DAfP Kolloquium, Bamberg, Germany, June 2006.