

*August 2008*

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## Explanation of front page:

Above: Schematic cross section of an electro-optically tunable microring resonator device based on LiNbO<sub>3</sub> thin film. Single-crystalline LiNbO<sub>3</sub> films with a thickness of 600 nm and a surface area of 12×14 mm<sup>2</sup> have been fabricated by crystal ion slicing and wafer bonding to achieve waveguiding with an index contrast of  $\Delta n = 0.7$ . Microrings and waveguides have been structured by laser lithography and Ar-ion sputtering.

Below: Scanning electron microscopy image of a microring resonator with a coupling waveguide in LiNbO<sub>3</sub> thin film.

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# Nonlinear Optics Laboratory

## Annual Report 2007 - 2008

Prof. Dr. P. Günter  
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## Personnel

### Head

Prof. Dr. P. Günter

### Project Leaders

Dr. Mojca Jazbinsek

Paolo Losio *until March 2007*

Dr. Gorazd Poberaj

Dr. Arno Schneider

### Academic Staff

Tobias Bach	<i>until June 2008</i>	Fabian Brunner
Riccardo Degl'Innocenti	<i>until April 2007</i>	Harry Figi
Dr. Andrea Guarino	<i>until May 2007</i>	Christoph Hunziker
Christian Herzog	<i>until May 2007</i>	Flurin Juvalta
Manuel Koechlin	Dr. O-Pil Kwon	<i>until August 2007</i>
Seong-Ji Kwon	Paolo Losio	<i>until March 2007</i>
Aleksej Majkic		Dr. Carolina Medrano
Roger Mosimann	Lukas Mutter	<i>until November 2007</i>
Daniele Rezzonico	<i>until December 2007</i>	Blanca Ruiz Brunner
Marcel Stillhart		Frederik Sulser
Dr. Zhou Yang	<i>until December 2007</i>	

### Electronic and Laser Engineers

Steffen Reidt

### Technical Staff

Reto Gianotti *until August 2007*

Marcel Sturzenegger

Jaroslav Hajfler

### Administrative Staff

Liselotte Artel

Lotti Nötzli *until Mai 2007*

Christina Ze-Egli *since Mai 2007*

## Academic and Corporate Visitors 2007 - 2008

Prof. Dr. Roger S. Cudney	CICESE, Ensenada, Mexico
Prof. Dr. Alexandar Grabar	Uzhgorod National University, UKRAINE
Prof. Dr. Bruce Eichinger	University of Washington, Seattle, USA
Prof. Dr. Seth Marder	Georgia Institute of Technology, USA
Prof. Dr. Germano Montemezzani	Univ. of Metz, France
Prof. Dr. Takashige Omatsu	Chiba University, Japan
Prof. Dr. Igor Poberaj	University of Ljubljana, Slovenia
Dr. Norio Sato	Toyota Motor Europe, Zaventem, B
Prof. Dr. Zlatko Sitar	North Carolina State University, USA
Prof. Dr. Yong-Yuan Zhu	Nanjing University, China

## Sponsors

ETH Zürich  
Swiss National Science Foundation  
KTI  
SBF COST 529



## Publications 2007 - 2008

### Books

P. Günter and J.-P. Huignard (Eds.)  
"Photorefractive Materials and Their Applications 2 Materials"  
Springer Series in Optical Sciences, Volume **114**  
(Springer Science + Business Media Inc., USA 2007)

P. Günter and J.-P. Huignard (Eds.)  
"Photorefractive Materials and Their Applications 3 - Applications"  
Springer Series in Optical Sciences, Volume **115**  
(Springer Science + Business Media Inc., USA 2007)

### Book Chapters

I. Biaggio  
"Recording Speed and Determination of Basic Materials Properties", Chapter 3 in:  
"Photorefractive Materials and Their Applications 2 - Materials"  
Springer Series in Optical Sciences, Volume **114**  
(Eds. P. Günter and J.-P. Huignard), Springer Science+Business Media LCC, New York, USA, 51-81 (2007)

M. Duelli, G. Montemezzani, M. Zgonik and P. Günter  
"Photorefractive Memories for Optical Processing, Chapter 4 in:  
"Photorefractive Materials and Their Applications 3 - Applications"  
Springer Series in Optical Sciences, Volume **115**  
(Eds. P. Günter and J.-P. Huignard), Springer Science + Business Media Inc., USA, 77-134 (2007)

A.A. Grabar, M. Jazbinsek, A.N. Shumelyuk, Yu.M. Vysochanskii, G. Montemezzani and P. Günter  
"Photorefractive Effects in  $\text{Sn}_2\text{P}_2\text{S}_6$ ", Chapter 10 in:  
"Photorefractive Materials and Their Applications 2 - Materials"  
Springer Series in Optical Sciences, Volume **114**  
(Eds. P. Günter and J.-P. Huignard), Springer Science+Business Media LCC, New York, USA, 327-362 (2007)

P. Günter and J.-P. Huignard

"Introduction", Chapter 1 in:

"Photorefractive Materials and Their Applications 2 Materials"

Springer Series in Optical Sciences, Volume **114**

(Eds. P. Günter and J.-P. Huignard), Springer Science + Business Media Inc., USA, 1-8 (2007)

P. Günter and J.-P. Huignard

"Introduction", Chapter 1 in:

"Photorefractive Materials and Their Applications 3 - Applications"

Springer Series in Optical Sciences, Volume **115**

(Eds. P. Günter and J.-P. Huignard), Springer Science+Business Media LCC, New York, USA, 1-5 (2007)

R. Kind

"Evidence for Ferroelectric Nucleation Centres in the Pseudo-spin Glass System  $\text{Rb}_1 - x(\text{ND}_4)_x\text{D}_2\text{PO}_4$ : A87Rb NMR Study"

Springer, Berlin-Heidelberg, 119-147 (2007)

M. Zgonik, M. Ewart, C. Medrano and P. Günter

"Photorefractive Effects in  $\text{KNbO}_3$ , Chapter 7 in:

"Photorefractive Materials and Their Applications 2 - Materials"

Springer Series in Optical Sciences, Volume **114**

(Eds. P. Günter and J.-P. Huignard), Springer Science + Business Media Inc., USA, 205-240 (2007)

M. Jazbinsek, O-P. Kwon, C. Bosshard and P. Günter

Organic Nonlinear Optical Crystals and Single-crystalline Thin Films

Chapter 1 in: Handbook of Organic Electronics and Photonics - Photonic Materials and Devices

American Scientific Publishers, Volume 2, (Eds. Hari Singh Nalwa), California, USA, 2-29 (2008)

R.U.A. Khan, C. Hunziker, R. Ulbricht, A. Tapponnier and P. Günter

Organic Semiconducting Thin Films, Chapter 2 in: Handbook of Organic Electronics and Photonics - Photonic Materials and Devices

American Scientific Publishers, Volume 2, (Eds. Hari Singh Nalwa), California, USA, 34-74 (2008)

## Journal Publications

T. Bach, M. Jazbinsek, G. Montemezzani, P. Günter, A.A. Grabar and Y.M. Vysochanskii

"Tailoring of Infrared Photorefractive Properties of  $\text{Sn}_2\text{P}_2\text{S}_6$  Crystals by Te and Sb Doping"

*J. Opt. Soc. Am B* **24**, 12777-12782 (2007)

A. Choubey, O-P. Kwon, M. Jazbinsek and P. Günter

"High-Quality Organic Single Crystalline Thin Films for Nonlinear Optical Applications by Vapor Growth"

*Crystal Growth & Design* **7** (2), 402-405 (2007)

R. Degl Innocenti, A. Majkic, P. Vorburger, G. Poberaj and P. Günter

"Ultraviolet Electro-optic Amplitude Modulation in b-BaB<sub>2</sub>O<sub>4</sub> Waveguides"

*Appl. Phys. Lett.* **91** 051105-1-3 (2007)

A. Guarino, G. Poberaj, D. Rezzonico, R. Degl Innocenti and P. Günter

"Electro-optically Tunable Microring Resonators in Lithium Niobate"

*Nature Photonics* **1**, 407-410 (2007)

Ch. Herzog, S. Aravazhi, A. Guarino, A. Schneider, G. Poberaj and P. Günter

"Epitaxial  $\text{K}_{1-x}\text{Na}_x\text{Ta}_{0.66}\text{Nb}_{0.34}\text{O}_3$  Thin Films for Optical Waveguiding Applications"

*J. Opt. Soc. Am. B* **24**, (4), 829-832 (2007)

Ch. Herzog, St. Reidt, G. Poberaj and P. Günter

"Electro-optic Phase Modulation in Ridge Waveguides of Epitaxial  $\text{K}_{0.95}\text{Na}_{0.05}\text{Ta}_{0.71}$  Thin Films"

*Optics Express* **15**, 7642-7652 (2007)

Ch. Hunziker, X. Zhan, P.A. Losio, H. Figi, O-P. Kwon, St. Barlow, P. Günter and S.R. Marder

"Highly Ordered Thin Films of a Bis(Dithienothiophene) Derivative"

*J. Mater. Chem.* **17**, 4972-4979 (2007)

O-P. Kwon, D. Rezzonico, S.-J. Kwon, M. Jazbinsek, A. Tapponnier, P. Günter and S.-H. Lee

"Polar Ordering of Linear Rod-like Polyamide with Different Linking Structure of Nonlinear Optical Chromophores"

*Optical Materials* **29**, 833-839 (2007)

O-P. Kwon, S.J. Kwon, M. Jazbinsek, A. Choubey, V. Gramlich and P. Günter

"New Organic Nonlinear Optical Polyene Crystals and Their Unusual Phase Transitions"

*Adv. Funct. Mater.* **17**, 1750-1756 (2007)

O-P. Kwon, S.-J. Kwon, M. Stillhart, M. Jazbinsek, A. Schneider, V. Gramlich and P. Günter

"New Organic Nonlinear Optical Verbenone-Based Triene Crystal for Terahertz Applications"

*Crystal Growth + Design* **7**, 2517-2521 (2007)

P.A. Losio, Ch. Hunziker and P. Günter

"Amplified Spontaneous Emission in Para-sexiphenyl Bulk Single Crystals"

*Appl. Phys. Lett.* **90**, 241103 (2007)

A. Majkic, G. Poberaj, R. Degl Innocenti, M. Döbeli and P. Günter

"Cr:LiSrAlF<sub>6</sub> Channel Waveguides as Broadband Fluorescence Sources"

*Appl. Phys.* **88**, 205-209 (2007)

R. Mosimann, P. Marty, T. Bach, F. Juvalta, M. Jazbinsek, P. Günter and A.A. Grabar

"High-Speed Photorefraction at Telecommunication Wavelength 1.55  $\mu$ m in Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub>:Te"

*Optics Letters* **32**, 3230-3232 (2007)

L. Mutter, A. Guarino, M. Jazbinsek, M. Zgonik, P. Günter and M. Döbeli

"Ion Implanted Optical Waveguides in Nonlinear Optical Organic Crystal"

*Optics Express* **15**, 629-638 (2007)

L. Mutter, F.D.J. Brunner, Z. Yang, M. Jazbinsek and P. Günter

"Linear and Nonlinear Optical Properties of the Organic Crystal DSTMS"

*J. Opt. Soc. Am. B.* **24** 2556-2561 (2007)

L. Mutter, M. Koechlin, M. Jazbinsek and P. Günter

"Direct Electron Beam Writing of Channel Waveguides in Nonlinear Optical Organic Crystals"

*Optics Express* **15**, 16828-16838 (2007)

D. Rezzonico, M. Jazbinsek, P. Günter, Ch. Bosshard, D.H. Bale, Y. Liao, L.R. Dalton and Ph.J. Reid

"Photostability Studies of  $\pi$ -Conjugated Chromophores with Resonant and Nonresonant Light Excitation for Long-life Polymeric Telecommunication Devices"

*J. Opt. Soc. Am. B* **24**, 2199-2207 (2007)

B. Ruiz, B.J. Coe, R. Gianotti, V. Gramlich, M. Jazbinsek and P. Günter  
"Polymorphism, Crystal Growth and Characterization of an Organic Non-linear Optical Material: DAPSH"

*CrystEngComm* **9**, 772-776 (2007)

A. Schneider, P. Günter

"Coherent Detection of Terahertz Pulses Based on Two-photon Absorption in a Photodiode"

*Applied Physics Letters* **90**, 121125 1-3 (2007)

A. Schneider, F.D.J. Brunner and P. Günter

"Determination of the Refractive Index Over a Wide Wavelength Range Through Time-delay Measurements of Femtosecond Pulses"

*Optics Communications* **275**, 354-358 (2007)

A. Tapponnier, R. Khan, C. Marcolli and P. Günter

"Molecularly Ordered Aluminum Tris-(8-hydroxyquinoline) Thin Films Grown by Hot-wall Deposition"

*Thin Solid Films* **515**, 3061-3064 (2007)

Z. Yang, M. Wörle, L. Mutter, M. Jazbinsek and P. Günter

"Synthesis, Crystal Structure, and Second-Order Nonlinear Optical Properties of New Stilbazolium Salts"

*Crystal Growth and Design* **7**, 83-86 (2007)

Z. Yang, L. Mutter, M. Stillhart, B. Ruiz, S. Aravazhi, M. Jazbinsek, A. Schneider, V. Gramlich and P. Günter

”Large-Size Bulk and Thin-Film Stilbazolium-Salt Single Crystals for Non-linear Optics and THz Generation”

*Adv. Funct. Mater.* **17**, 2018-2023 (2007)

Z. Yang, M. Jazbinsek, B. Ruiz, S. Aravazhi, V. Gramlich and P. Günter  
”Molecular Engineering of Stilbazolium Derivatives for Second-Order Non-linear Optics”

*Chem. Mater.* **19**, 3512-3518 (2007)

Ch. Herzog, G. Poberaj and P. Günter

”Electro-optic Behavior of Lithium Niobate at Cryogenic Temperatures”

*Optics Communications*, **281**, 793-796 (2008)

O-P. Kwon, S.-J. Kwon, H. Figi, M. Jazbinsek and P. Günter

”Organic Electro-optic Single-Crystalline Thin Films Grown Directly on Modified Amorphous Substrates”

*Adv. Mater.*, **20**, 543-545 (2008)

S.-J. Kwon, O-P. Kwon, J.-I. Seo, M. Jazbinsek, L. Mutter, V. Gramlich, Y.-S. Lee, H. Yun and P. Günter

”Highly Nonlinear Optical Configurationally Locked Triene Crystals Based on 3,5-Dimethyl-2-cyclohexen-1-one”

*J. Phys. Chem.*, **112**, 7846-7852 (2008)

A. Majkic, M. Koechlin, G. Poberaj and P. Günter

”Optical Microring Resonators in Fluorine-implanted Lithium Niobate”

*Optics Express*, **16**, 8769-8779 (2008)

L. Mutter, M. Jazbinsek, Ch. Herzog and P. Günter

”Electro-optic and Nonlinear Optical Properties of Ion Implanted Waveguides in Organic Crystals”

*Optics Express*, **16**, 731-739 (2008)

G. Poberaj, M. Koechlin, F. Sulser, A. Guarino, J. Hajfler and P. Günter

”Ion-sliced Lithium Niobate Thin Films for Active Photonic Devices”

*Opt. Mater.*, doi:10.1016/j.optmat.2007.12.1019 (2008)

G. Poberaj, R. Degl Innocenti, C. Medrano and P. Günter

”UV Integrated Optics Devices Based on Beta-barium Borate”

*Opt. Mater.*, doi:10.1016/j.optmat.2007.12.020 (2008)

D. Rezzonico, M. Jazbinsek, A. Guarino, O-P. Kwon and P. Günter  
"Electro-optic Charon Polymeric Microring Modulators"  
*Optics Express*, **16**, 613-627 (2008)

D. Rezzonico, S.-J. Kwon, H. Figi, O-P. Kwon, M. Jazbinsek and P. Günter  
"Photochemical Stability of Nonlinear Optical Chromophores in Polymeric and Crystalline Materials"  
*J. Chem. Phys.*, **128**, 124713 1-6 (2008)

G.M. Rotaru, S.N. Gvasaliya, V. Pomjakushin, B. Roessli, Th. Strässle, S.G. Lushnikov, T.A. Shaplygina and P. Günter  
"Atomic Displacements in  $\text{PbMg}_1/3\text{Nb}_2/3\text{O}_3$  under High Pressures"  
*Condens. Matter*, **20** (2008)

G.-M. Rotaru, S.N. Gvasaliya, B. Roessli, S. Kojima, S.G. Lushnikov and P. Günter  
"Evolution of the Neutron Quasi-elastic Scattering Through the Ferroelectric Phase Transition in 93 per cent  $\text{PbZn}_1/3\text{Nb}_2/3\text{O}_3$  - 7 per cent  $\text{PbTiO}_3$ "  
*Applied Physics Letters* (2008)

## Conference Publications

A. Schneider, M. Stillhart, Z. Yang, F. Brunner, P. Günter  
"Improved Emission and Coherent Detection of Few-cycle Terahertz Transients Using Laser Pulses at  $1.5 \mu\text{m}$ "  
*Nonlinear Optics and Applications II* (ed. M. Bertolotti), *Proceedings of SPIE* **6282** 658211-1 (2007)

## Presentations 2007 - 2008

\* = invited talk

### **T. Bach**

"Photorefractive Properties and Applications of Doped  $\text{Sn}_2\text{P}_2\text{S}_6$  Crystals in the Near Infrared"

Controlling Light with Light, Lake Tahoe, USA

14.-16.10.07

### **F. Brunner**

"Direct Measurement of the Optical Group Index Dispersion" Annual Meeting of the Swiss Physical Society, Zürich

20./21.2.07

### **R. Degl'Innocenti**

"Second Harmonic Generation of CW UV Light and Production of  $\beta$ - $\text{BaB}_2\text{O}_4$  Optical Waveguides" Annual Meeting of the Swiss Physical Society, Zürich

20./21.2.07

### **R. Degl'Innocenti**

"Ultraviolet Second Harmonic Generation in  $\beta$ - $\text{BaB}_2\text{O}_4$  Waveguides" Conference on Lasers and Electro-Optics (CLEO), Baltimore, USA

6.-11.5.07

### \* **P. Günter**

"Organic Nonlinear Optical Crystals and THz Waves" Kolloquium "Optik und Kondensierte Materie", Universität Bonn, D

26.6.07



**\* P. Günter**

"Smart-guide Ferroelectric Thin Films for Integrated Optics" ICE 2007, Arusha, Tanzania  
31.7.-3.8.07

**\* P. Günter**

"Generation and Detection of THz Waves for Materials Spectroscopy and Security Applications" 3rd International Workshop on Photonic and Electronic Materials, Donostia, San Sebastian, Spain  
5.7.07

**\* P. Günter**

"Organic Crystalline and Polymeric Materials for Electro-optical Microring Resonators" Molecular Photonics Conference, Friday Harbour, Washington, USA  
27.-31.8.07

**\* Ch. Hunziker, P.A. Losio, H. Figi, O-P. Kwon, X. Zhan, P. Günter, St. Barlow, S.R. Marder**

"Highly-ordered Thin Films of a Bis(dithienothiophene) Derivative" The 9th European Conference on Molecular Electronics (ECME), Lorraine, France  
5.-8.9.07

**M. Jazbinsek**

"High-quality Organic Electro-optic Single Crystalline Thin Films for Integrated Optics Based on Config. Locked Polyene" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
18.6.07

**M. Jazbinsek**

" $\text{Sn}_2\text{P}_2\text{S}_6$  Crystals with Enhanced Sensitivity for Photorefractive Applications at  $1.06 \mu\text{m}$ " Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
18.6.07

**M. Jazbinsek, F. Juvalta, P. Günter, G. Montemezzani, K. Kitamura**

"Near-stoichiometric  $\text{LiTaO}_3$  for Deep UV Electro-optical Applications" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
20.6.07

**M. Jazbinsek**, R. Mosimann, P. Gnter, G. Montemezzani

"Interband Dynamic Holography at Visible Wavelengths in  $\text{Sn}_2\text{P}_2\text{S}_6$ " Conference on Lasers and Electro-Optics (CLEO Europe), Mnchen, D

20.6.07

**M. Jazbinsek**

"Light Induced Dynamic and Quasi-fixed Waveguides in Mg-doped Near-stoichiometric  $\text{LiTaO}_3$ " Controlling Light with Light (PR), Olympic Valley, California, USA

14.-16.10.07

**M. Jazbinsek**

"Organic Photorefractive Materials Based on Mesophase Photoconducting Polymers" Controlling Light with Light (PR), Olympic Valley, California, USA

14.-16.10.07

**O.-P. Kwon**

"Organic Nonlinear Optical Materials for VLSI Photonics and THz Applications" Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

12.1.07

**O.-P. Kwon**

"Organic Nonlinear Optical Materials for VLSI Photonics and THz Applications" Ajou University, Suwon, Korea

15.1.07

**O.-P. Kwon**

"Organic Nonlinear Optical Materials for VLSI Photonics and THz Applications" Chonbuk National University, Chonju, Korea

17.1.07

\* **O-P. Kwon**

"Organic Nonlinear Optical Configurationally Locked Polyene Crystals" Korea Advanced Institute of Science and Technology (KAIST), Dept. of Physics, Daejeon, Korea

9.3.07

\* **O-P. Kwon**

"High Quality Organic Single Crystalline Thin Films for Nonlinear Optical Applications" Korean Polymer Society Meeting, Ilsan, Korea  
October 2007

\* **P.A. Losio**, Ch. Hunziker, P. Günter

"Amplified Spontaneous Emission in Para-sexiphenyl Bulk Single Crystals" The 9th European Conference on Molecular Electronics (ECME), Lorraine, France  
5.-8.9.07

**A. Majkic**, G. Poberaj, R. Degl Innocenti, P. Günter, M. Döbeli

"Broadband Fluorescence Source Based on Cr:LiSrAlF<sub>6</sub> Channel Waveguides" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
17.-22.6.07

\* **C. Medrano**

"Second Harmonic Generation and Industrial Applications" Institute of Physics, Universidad Nacional Autonoma de Mexico, Mexico, D.F. Mexico  
6.2.07

\* **C. Medrano**

"Compact UV Lasers Using Frequency Doubling in Ion Implanted BBO Waveguides" 3rd International Workshop on Photonic and Electronic Materials, Donostia, San Sebastian, Spain  
4.-6.7.07

**G. Montemezzani**, C. Dan, M. Gorram, N. Fressengeas, D. Wolfersberger, F. Juvalta, R. Mosimann, M. Jazbinsek, P. Günter, A.A. Grabar  
"Real-time Photoinduced Waveguides in Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub> Bulk Crystals with Visible or Near Infrared Light" Controlling Light with Light (PR), Olympic Valley, California, USA  
14.-16.10.07

**L. Mutter**

"Optical Waveguides in the Highly Nonlinear Optical Organic Crystal DAST by Ion Implantation and E-beam Structuring" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
17.-22.6.07

**G. Poberaj**, A. Guarino, M. Koechlin, F. Sulser, P. Günter  
"Lithium Niobate Thin Films for Active Integrated Photonic Devices" Annual Meeting of the Swiss Physical Society, Zürich  
20.-21.2.07

**G. Poberaj**, A. Guarino, P. Günter  
"Electro-Optically Tunable Microring Resonators Based on Single-Crystalline LiNbO<sub>3</sub> Thin Films" Conference on Lasers and Electro-Optics (CLEO), Baltimore, USA  
6.-11.5.07

**G. Poberaj**, A. Guarino, P. Günter  
"Electro-Optically Tunable Microring Resonators in LiNbO<sub>3</sub> Thin Films" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
17.-22.6.07

\* **G. Poberaj**  
"UV Integrated Optics Devices Based on Beta-Barium Borate" 4th DGG Symposium on Novel Optical Technologies, Aachen, D  
4.- 6.6.07

\* **G. Poberaj**  
"Lithium Niobate Thin Films for Active Integrated Photonic Devices" 3rd International Workshop on Photonic and Electronic Materials, Donostia, San Sebastian, Spain  
4.-6.7.07

**D. Rezzonico**  
"Two-step Photolithographic Technique for Laterally Coupled Hybrid Polymer Microring Resonators" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
17.-22.6.07

**G.M. Rotaru**, S.N. Gvasaliya, V. Pomjakushin, B. Roessli, Th. Strässle, S.G. Lushnikov, T.A. Shaplygina and P. Günter  
"Neutron Diffraction Study of PbMg<sub>1/13</sub>Nb<sub>2/3</sub>O<sub>3</sub> Under High Pressure" Annual Meeting of the Swiss Physical Society, Zürich  
20./21.2.07

**B. Ruiz**

"New Organic Salts for Electro-optics and THz Generation" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
17.-22.6.07

**A. Schneider**

"New Developments in the Coherent Detection of Ultrashort Terahertz Pulses" Annual Meeting of the Swiss Physical Society, Zürich  
20.-21.2.07

**A. Schneider**

"Improved Emission and Coherent Detection of Few-Cycle Terahertz Transients Using Laser Pulses at 1.5  $\mu\text{m}$ " SPIE Europe Optics and Optoelectronics, Prague, CZ  
16.-19.4.07

**A. Schneider**

"Coherent Detection of Few-cycle Terahertz Pulses with a Minimum Number of Optical Elements" Conference on Lasers and Electro-Optics (CLEO Europe), München, D  
17.-22.6.07

**\* A. Schneider**

"Des molécules pour l'industrie horlogère" Confrence de l'ASRH (Association Suisse pour la recherche horlogère)  
18.10.2007

**M. Stillhart**

"Novel Organic Crystals for Terahertz Applications" Annual Meeting of the Swiss Physical Society, Zürich  
20./21.2.07

**T. Bach, L. Mutter, B. Ruiz, M. Jazbinsek, P. Günter**

"DAST Crystals for Photonic Applications" International Workshop on nonlinear wave-mixing for laser technology, Chiba University, Japan  
17.-18.7.08

**H. Figi** (Poster)

"Electro-optic Active Single Crystal Waveguides of DAT2 grown from the Melt" 10th International Conference on Organic Nonlinear Optics (ICONO10), Santa Fe, New Mexico, USA  
18.-23.5.08

\* **P. Günter**

"Generation and Detection of THz Waves for Materials Spectroscopy and Security Applications" SPIE, San Jose, California  
27.-31.1.08

\* **P. Günter**

"Electro-optical Microring Resonators in Epitaxial Crystalline Organic and Ion Sliced Inorganic Materials" Conference on Lasers and Electro-Optics (CLEO), San Jose, California  
6.-8.5.08

\* **P. Günter**

"Organic Crystalline and Polymeric Materials for Electro-optical Microring Resonators" 10th International Conference on Organic Nonlinear Optics (ICONO10), Santa Fe, New Mexico, USA  
18.-23.5.08

\* **P. Günter**

"Polar Organic Crystals for THz Wave Generation and Electro-optics" Academy of Sciences, Prague, Czech Rep.  
17.4.08

**Ch. Hunziker**

"Ordering and Its Influence on Charge-transport at the Example of a Bis(dithienothiophene) Derivative" 10th International Conference on Organic Nonlinear Optics (ICONO10), Santa Fe, New Mexico, USA  
18.-23.5.08

**M. Jazbinsek**

"Direct Electron-beam Structuring of Optical Waveguides in Organic Electro-Optic Crystals" Conference on Lasers and Electro-Optics (CLEO), San Jose, California  
4.-9.5.08

**M. Jazbinsek**

"Electro-optic Polymer Microring Resonators Based on Charon Coupler"  
Conference on Lasers and Electro-Optics (CLEO), San Jose, California  
4.-9.5.08

**M. Jazbinsek** (Poster)

"Electro-optic Channel Waveguides in Organic Crystals Fabricated by Direct E-beam Structuring Photochemical Stability of NLO Single Crystals and Guest-host Polymers - Polymeric EO Microring Resonators Based on Charon Coupler" ICONO 10, Santa Fe, NM, USA  
18.-23.5.08

**M. Jazbinsek**

"Ion Implantation and Electron-beam Structuring of Optical Waveguides in Organic Electro-optic Crystals and Double Phase Conjugate Mirror for Near-infrared Lasers Using  $\text{Sn}_2\text{P}_2\text{S}_6$  Crystals" ECAPD 9, Rome, Italy  
26.-29.8.08

\* **M. Jazbinsek**

"Fast Photorefraction in the Infrared with Ferroelectric  $\text{Sn}_2\text{P}_2\text{S}_6$  (SPS)" International Workshop on nonlinear wave-mixing for laser technology, Chiba University, Japan  
17.-18.7.08

**F. Juvalta**

"Fast Optically Induced Waveguides and Waveguide Arrays in  $\text{Sn}_2\text{P}_2\text{S}_6$ "  
ECAPD 9, Rome, Italy  
26.-29.8.08

**M. Koechlin**, F. Sulser, G. Poberaj and P. Günter

"Electro-optically Active Integrated Photonic Devices in  $\text{LiNbO}_3$  Thin Films"  
Annual Meeting of the Swiss Physical Society, Geneva, Switzerland  
26.-27.3.08

**M. Koechlin**

"Electro-optically Active Microring Resonators in  $\text{LiNbO}_3$  Thin Films and F-implanted  $\text{LiNbO}_3$ -crystals" 9th European Conference on Applications of Polar Dielectrics, Rome, Italy  
26.-29.8.08

**S.-J. Kwon** (Poster)

"Highly Nonlinear Optical Configurationally Locked Triene Crystals Based on 3,5-Dimethyl-2-Cyclohexen-1-one" ICONO 10, Santa Fe, NM, USA  
18.-23.5.08

**A. Majkic**, M. Koechlin, G. Poberaj and P. Günter

"Microring Resonators in F<sup>3+</sup>-implanted Lithium Niobate" Annual Meeting of the Swiss Physical Society, Geneva, Switzerland  
26.-27.3.08

**R. Mosimann**

"Photorefractive Two-wave Mixing in Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub>:Te at 1.55 μm" Conference on Lasers and Electro-Optics (CLEO), San Jose, California  
4.-9.5.08

R. Mosimann

"Photorefractive Two-wave Mixing at 1.55 μm in Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub>:Te" ECAPD 9, Rome, Italy  
26.-29.8.08

\* **G. Poberaj**

"Electro-optical Microrings in Epitaxial Crystalline Organic and Ion Sliced Inorganic Materials" Conference on Lasers and Electro-Optics (CLEO), San Jose, California  
6.-8.5.08

\* **G. Poberaj**

"Ion-sliced Lithium Niobate Thin Films for Active Photonic Devices" User Meeting, AIM-Center for Application of Ion Beams in Materials Research  
7.7.08

\* **G. Poberaj**

"Ion-sliced Lithium Niobate Thin Films for Active Photonics Devices" 9th European Conference on Applications of Polar Dielectric (ECAPD 9), Rome, Italy  
26.-29.8.08



**A. Schneider**

"A Terahertz Time-domain Spectrometer with a Minimum Number of Optical Components" International Forum on Terahertz Spectroscopy, Kaiserslautern, D

4.-5.03.08

**M. Stillhart** (Poster)

"A Highly Efficient Source Material for THz Time-domain Spectroscopy" International Forum on Terahertz Spectroscopy, Kaiserslautern, D

4.-5.03.08

**M. Stillhart**

"Improving Stilbazolium Salts for the Emission and Detection of Few-cycle Terahertz Pulses" 2nd THz Frischlinge Meeting

1.-4.6.08

**F. Sulser**

"Photonic Crystal Structures in Ion-sliced LiNbO<sub>3</sub> Thin Films" 9th European Conference on Applications of Polar Dielectric (ECAPD 9), Rome, Italy

26.-29.8.08



## Conferences 1986 - 2000

- International School on Material Science and Technology  
Course on: "Electro-optic and Photorefractive Materials"  
Brice  
July 6-17, 1986
- First European Conference on Applications of Polar Dielectrics (ECPD'1)  
and International Symposium on Applications of Ferroelectrics (ISAF'88)  
Zurich  
August 29-September 1, 1988
- International Conference on Organic Nonlinear Optics (ICONO'5)  
Davos  
March 12-16, 2000

## Group Seminars 1984 - 2007

Winter Semester 84/85

"Dielectric Materials and Optical Effects"

Summer Semester 86

"Nonlinear Optical Effects in Molecular Crystals"

Winter Semester 86/87

"Active Photorefractive Defects in Oxygen-Octaedra Ferroelectrics"

Winter Semester 86/87

"Optical Signal Processing and Optical Associative Memory"

Summer Semester 87

"Ultra-short Laser Pulses"

Summer Semester 88

"Nonlinear Optical Effects in Organic Materials"

Winter Semester 88/89

"Optical Bistability"

Summer Semester 89

"Nonlinear Optical Effects in Optical Waveguides"

Winter Semester 89/90

"Photorefractive Effects in Electro-optical Crystals"

Summer Semester 90

"Nonlinear Optical Effects at Interfaces"

Winter Semester 90/91

"Electro-optical and Nonlinear Optical Properties of Dipolar Liquids"

Summer Semester 91

"Non-classical Light States and Propagation"

Winter Semester 91/92

"Electro-optical and Nonlinear Optical Effects in 2-dimensional Structures"

Summer Semester 92

"Matrix Methods in Optics"

Winter Semester 92/93

"Optical Computing"

Summer Semester 93

"Polymers in Optics"

Winter Semester 93/94

"Photonic Band Gaps"

Summer Semester 94

"Nonlinear Dynamics of Optical Systems"

Winter Semester 94/95

"Ferro- and Pyro-Electricity"

Summer Semester 95

"Imaging of Atoms and Molecules - Nanoscopical Methods"

Winter Semester 95/96

"Linear and Nonlinear Optical Spectroscopy"

Summer Semester 96

"(All-)optical Signal Processing: Applications vs. Basic Research"

Winter Semester 96/97

"Photorefractive and Spatial Solitons"

Summer Semester 97

"Electro-luminescence in Organic Materials"

Winter Semester 97/98

"Charge Transport in Dielectric Materials"

Summer Semester 98

"Lightwave Communication"

Winter Semester 98/99

"Terahertz Waves and Nonlinear Optics"

Summer Semester 2000

"Photoinduced dynamic optical gratings in femtoseconds and picoseconds range"

Summer Semester 2001

"Microresonators for Photonics"

Summer Semester 2002

"Optical Properties of Photonic Crystals"

Winter Semester 04/05

"Terahertz Waves for Imaging and Spectroscopy"

Summer Semester 07

"Photonic Crystals"

## Projects 1991 - 2010

”Streifenwellenleiter und Verfahren zu seiner Herstellung”

Sandoz

1991

”Study of Nonlinear Organic Optical Materials”

ESTEC Project

1992

”Study and Development of Wavefront Reversing Mirrors”

ESTEC Project

1993

”Establishment of a Data-Base of Advanced Nonlinear Optical Techniques and Materials for Pulsed Laser Applications in the Near- and Mid-Infrared”

ESTEC Project

1994

”Kompakte frequenzverdoppelte Blaue Laser”

KTI Project

2001

”Next-Generation Active Integrated Optic Subsystems”

NAIS Project

2002

”Materials and Systems for Optical Data Storage and Processing”

COST

2002

”Organic Small Molecular Thin Films for High Efficiency Light Emission”

COST

2004

”Chalcogenide Crystals for All-optical Photonics Devices in the Near Infrared”

NF-Scopes

Until August 31, 2008

”Electro-optic Microring Resonators for Next Generation Active Integrated Systems”

ETH

Until December 31, 2008

”Compact Continuous-Wave UV Laser Sources”

KTI P-No. 7523.3

Until February 28, 2009

”Active Photonic Bandgap Structures in Thin Lithium Niobate”

ETH

Until August 31, 2009

”Terahertz Systems for Explosives and Bio-agents Detection”

KTI P-No. 9046.2

Until November 30, 2009

”Photorefractive Ferroelectrics for Photonics and Optoelectronics”

NF

Until January 31, 2010

”Nichtlinear Optische und Elektrooptische Eigenschaften von Molekularkristallen”

NF

Until January 31, 2010

”Multispectral Terahertz, Infrared, Visible Imaging and Spectroscopy”

EU

Until January 31, 2010



## Habilitation Theses in Physics 1993 - 2002

Dr. Dieter Suter

”Beyond the Two-level Atom - Methods for Atomic Sublevel Spectroscopy”  
ETH Zürich  
1993

Dr. Christian Bosshard

”Third-Order Nonlinear Optics in Polar Materials”  
ETH Zürich  
1997

Dr. Uwe Siegner

”Femtosecond Dynamics in Semiconductors for Ultrabroadband Optical  
Excitation”  
ETH Zürich  
1999

Dr. Ivan Biaggio

”Nonlinear Optical Wave Interaction in Noncentrosymmetric Materials:  
Sub-Nanosecond Charge Migration and Degenerate Four Wave Mixing”  
ETH Zürich  
2001

Dr. Germano Montemezzani

”Optical Wave Manipulation and Signal Processing in Anisotropic Pho-  
torefractive Materials”  
ETH Zürich  
2002

## PhD Theses in Physics 1988

Colla, E.L.

"Incommensurability, Phase Transitions and Memory Effects in the Substitutionally Disordered System  $[(\text{CH}_3)_4\text{N}]_2\text{ZnCl}_{4-x}\text{Br}_x$ "

ETH Nr. 8455 (Prof. Dr. H. Gränicher & PD Dr. R. Kind & Prof. Dr. W. Petter)

Liechti, O.

"Phase Transitions in Mixed Crystal Systems: Solid Solutions of  $[(\text{CH}_3)_4\text{N}]_2\text{CuBr}_x\text{Cl}_{4-x}$  and of  $\text{Rb}_{1-x}(\text{NH}_4)_x\text{H}_2\text{PO}_4$ "

ETH Nr. 8688 (Prof. Dr. P. Günter & Prof. Dr. )

Voit, Eugen Andr

"Photorefractive Properties and Applications of  $\text{KNbO}_3$  Crystals"

ETH Nr. 8555 (H. Gränicher Prof. & PD Dr. R. Kind)

## PhD Theses in Physics 1990

Rosatzin, Martin

"Optisch induzierte, transiente Spinphänomene in atomaren Grundzuständen"

ETH Nr. 9302 (Prof. Dr. P. Günter & Prof. Dr. J. Mlynek)

## PhD Theses in Physics 1991

Bosshard, Christian

"Optical and Nonlinear Optical Properties of 2-Cyclooctylamino-5-Nitropyridine and 2-Docosylamino-5-Nitropyridine Molecules, Crystals and Langmuir-Blodgett-films"

ETH Nr. 9407 (Prof. Dr. P. Günter & Prof. Dr. H. Gränicher)

ETH medal award for excellent PhD work

Ingold, Matthias

"Optical Bistability, Beam Competition and Associative Memory based on Nematic Liquid Crystals and Photorefractive Crystals"

ETH Nr. 9506 (Prof. Dr. P. Günter & Prof. Dr. H. Gränicher)

Kerkoc, P.

"Growth of Bulk Crystals and Single Crystal Cord Fibers of 4-(N,N-Dimethylamino)-3-Acetamidonitrobenzene (DAN) and their Nonlinear Optical Properties"  
ETH Nr. 9413 (Prof. Dr. H. Gränicher & Prof. Dr. P. Günter)

Hürlimann, E.

"Integral Parameters of Xenon Dendrites"  
ETH Nr. 9606 (PD Dr. J. Bilgram & Prof. Dr. P. Günter & Prof. Dr. W. Kurz)

## PhD Theses in Physics 1992

Amrhein, Peter

"Photorefractive Spatial Light Modulation in KNbO<sub>3</sub> Crystals"  
ETH Nr. 9670 (Prof. Dr. P. Günter & Prof. Dr. H. Gränicher)

Sutter, Kurt A.

"Photorefractive Effects in Molecular Crystals"  
ETH Nr. 9671 (Prof. Dr. P. Günter & Prof. Dr. H. Gränicher)

Schwyn Thöny, Sylvia

"Rf Sputter Deposition of Waveguiding Epitaxial LiNbO<sub>3</sub> and KNbO<sub>3</sub> Thin Films"  
ETH Nr. 9929 (Prof. Dr. P. Günter & Dr. H. W. Lehmann)

Korner, Norman

"From Long Range Order to Glass Order: Static and Dynamic Properties of the Solution Rb<sub>1-x</sub>(ND<sub>4</sub>)<sub>x</sub>D<sub>2</sub>PO<sub>4</sub>"  
ETH Nr. 9952 (Prof. Dr. R. Kind & Prof. Dr. P. Günter & Prof. Dr. E. Brun)

Biaggio, Ivan

"Photorefractive Effects Induced by Short Light Pulses"  
ETH Nr. 10009 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

Montemezzani, Germano

"Photorefractive Gratings: Fixing and Recording in the Visible and Ultraviolet"  
ETH Nr. 10013 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

## PhD Theses in Physics 1993

Gutmann, Roland

"Liquid Phase Epitaxy of Para- and Ferroelectric  $\text{KTa}_{1-x}\text{Nb}_x\text{O}_3$ "

ETH Nr. 10095 (Prof. Dr. P. Günter & Prof. Dr. N. Setter)

## PhD Theses in Physics 1994

Pfändler, Stephan

"Local Structural Heterogeneities in Polymer Glasses and Perturbed Single Crystal Lattices: Investigations on Poly (Methyl/Methacrylate) and Potassium Niobate"

ETH Nr. 10924 (Prof. Dr. R. Kind & Prof. Dr. P. Günter & Prof. Dr. B. Meier)

## PhD Theses in Physics 1995

Küpfer, Manfred

"Nonlinear Optics of Organic Monolayers at the Air/Water Interface and of Langmuir-Blodgett Film Waveguides"

ETH Nr. 11000 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

Blasberg, Tilo

"Coherent Raman Scattering for Optical Detection of NMR in  $\text{Pr}^{3+}$ :  $\text{YAlO}_3$ "

ETH Nr. 11027 (Prof. Dr. P. Günter & Prof. Dr. M. Mehring & PD Dr. D. Suter)

Duelli, Markus

"Nonlinear Holographic Associative Memories"

ETH Nr. 11078 (Prof. Dr. P. Günter & Prof. Dr. U.P. Wild)

Knöpfle, Georg

"Nonlinear Optical Characterization and Crystalline Arrangement of Organic Molecules"

ETH Nr. 11159 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter)

Prtre, Philippe

”Relaxation Mechanisms in Nonlinear Optical Polymers”

ETH Nr.11193 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter)

Fluck, Daniel

”Ion-Implanted KNbO<sub>3</sub> Waveguides for Blue-Light Second-Harmonic Generation”

ETH Nr. 11225 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

## PhD Theses in Physics 1996

Schlesser, Raoul

”Organic Electro-Optic Crystals and Thin Films: Optical Characterization and Molecular Beam Deposition”

ETH Nr. 11456 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

Gitmans, Frank

”Growth of LiTaO<sub>3</sub> and LiNbO<sub>3</sub> Thin Films by Molecular Beam Epitaxy”

ETH Nr. 11693 (Prof. Dr. P. Günter & Prof. Dr. M. Erbudak)

Marty, Thomas

”Laser Cooling of Cesium Atoms: An Experimental Study of the Magneto-Optical Trap”

ETH Nr. 11771 (Prof. Dr. P. Günter & Dr. P. Thomann)

## PhD Theses in Physics 1997

König, Thomas

”Cluster Dynamics Processes in the Solid Solution Rb<sub>1-x</sub>(ND<sub>4</sub>)<sub>x</sub>D<sub>2</sub>PO<sub>4</sub> Investigated by Means of <sup>87</sup>Rb NMR Techniques”

ETH Nr. 12027 (Prof. Dr. R. Kind & Prof. Dr. P. Günter & Dr. J. Roos)

Pliska, T.

”Potassium Niobate Channel Waveguide for Blue Light Second-Harmonic Generation”

ETH Nr. 12222 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

Ewart, Michael John

”Reduced KNbO<sub>3</sub> for Photorefractive Applications”

ETH Nr. 12484 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

## PhD Theses in Physics 1998

Brülisauer, Simon

”Control of the Photorefractive Effect in KNbO<sub>3</sub> by Ion-Implantation”

ETH Nr. 12625 (Prof. Dr. P. Günter & PD Dr. Ch. Buchal)

Follonier, Stphane

”Light-Induced Charge Transport and Refractive Index Changes in Organic Electro-Optic Materials”

ETH Nr. 12681 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter)

Bernasconi, Pietro

”Physics and Applications of Ultraviolet Light Induced Photorefractive Gratings”

ETH Nr. 12761 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

Seuret, Christophe

”Atomic Force Microscopy of Organic Nonlinear Optical Molecules at the Gas-Liquid and Gas-Solid Interface”

ETH Nr. 12905 (Prof. Dr. P. Günter & Prof. Dr. R. Zenobi)

## PhD Theses in Physics 1999

Spreiter, Rolf

”Electro-Optical Effects in Organic Crystals”

ETH Nr. 13170 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter)

Jeitziner, Christian Anton

”NMR Studies of the Low-Temperature Structure and Dynamics of the Pseudo-Spin Glass D-RADP-X”

ETH Nr. 13257 (Prof. Dr. R. Kind & Prof. Dr. P. Günter & Dr. J. Roos)

Perhöfer, Harald

”Investigation of Epitaxial Ferroelectric K<sub>1-y</sub>Na<sub>y</sub>Nb<sub>1-x</sub>Ta<sub>x</sub>O<sub>3</sub> on Ba Doped

KTaO<sub>3</sub> Substrates”

ETH Nr. 13459 (Prof. Dr. P. Günter & Prof. Dr. M. Zgonik)

## PhD Theses in Physics 2000

Ryf, Roland

”Optical Parallel Processing Based on the Photorefractive Effect”

ETH Nr. 13546 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

Gubler, Ulrich

”Third-Order Nonlinear Optical Effects in Organic Materials”

ETH Nr. 13605 (Prof. Dr. P. Günter & Prof. Dr. F. Diederich & PD Dr. Ch. Bosshard)

Cereghetti, Paola Maria

”On the Dynamics of Glassy Phase States: An NMR Investigation”

ETH Nr. 13806 (Prof. Dr. Kind & Prof. Dr. B. Meier)

Liakatas, Ilias

”Polymer Electro-optic Modulators: Materials and Devices”

ETH Nr. 13994 (Prof. Dr. P. Günter & Prof. Dr. U. Suter & PD Dr. Ch. Bosshard)

## PhD Theses in Physics 2001

Abplanalp, M.

”Piezoresponse Scanning Force Microscopy of Ferroelectric Domains”

ETH Nr. 14048 (Prof. Dr. P. Günter & Prof. Dr. J. Fousek)

Bösch, Martin

”Electro-Optic Polymers: Photochemical Stability and In-line Modulator”

ETH Nr. 14192 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter & PD Dr. Ch. Bosshard)

Hagn, Gerhard

”Electro-Optic Effects and Their Applications in Indium Phosphide Waveguide Devices for Fiber Optic Access Networks”

ETH Nr. 14353 (Prof. Dr. P. Günter & Prof. Dr. H. Melchior)

## PhD Theses in Physics 2002

Kiy, Michael

”Charge Injection and Transport in Organic Semiconductors”

ETH Nr. 14631 (Prof. Dr. P. Günter & Prof. Dr. B. Batlogg & PD Dr. I. Biaggio)

## PhD Theses in Physics 2004

Dittrich, Philipp

”Ultraviolet Interband Photorefractive for Dynamic Waveguides and Filters, and Femtosecond Photo-structuring”

ETH Nr. 15414 (Prof. Dr. P. Günter & Prof. Dr. Esslinger & PD Dr. G. Montemezzani)

## PhD Theses in Physics 2005

Tapponnier, Axelle

”Charge Transport and Nonlinear Optical Effects in Organic Thin Films”

ETH Nr. 15911 (Prof. Dr. P. Günter & Prof. Dr. M. Erbudak)

Haertle, Daniel

”Photorefractive and Nonlinear Optical Properties of  $\text{Sn}_2\text{P}_2\text{S}_6$ ”

ETH Nr. 16107 (Prof. Dr. P. Günter, Prof. Dr. M. Sigrist & Prof. Dr. G. Montemezzani)

Schneider, Arno

”Generation and Detection of Terahertz Pulses in Organic Crystals”

ETH Nr. 16132 (Prof. Dr. P. Günter, Prof. Dr. M. Sigrist & PD Dr. Ch. Bosshard)

## PhD Theses in Physics 2007

Guarino, Andrea

”Electro-optic Microring Resonators in Inorganic Crystals for Photonic Applications”

ETH Nr. 17029 (Prof. Dr. P. Günter & Prof. Dr. V. Sandoghdar)



Degl'Innocenti, Riccardo

"Optical Waveguides in BaB<sub>2</sub>O<sub>4</sub> for Second Harmonic Generation and Electro-optic Modulation in the Deep UV"

ETH Nr. 17145 (Prof. Dr. P. Günter & Prof. Dr. M. Sigrist)

Herzog, Christian

"K<sub>1-y</sub>Na<sub>y</sub>Ta<sub>1-x</sub>Nb<sub>x</sub>O<sub>3</sub> Thin Films for Integrated Electro-Optics"

ETH Nr. 17275 (Prof. Dr. P. Günter & Prof. Dr. G. Montemezzani)

Marinov, Dilyan

"Laser Spectroscopic Trace-gas Sensing with Medical and Environmental Applications"

ETH Nr. 17281 (Prof. Dr. M. Sigrist & Prof. Dr. P. Günter & Dr. J.M. Rey)

Mutter, Lukas

"Nonlinear Optical Organic Crystals for Photonic Applications"

ETH Nr. 17482 (Prof. Dr. P. Günter & Prof. Dr. M. Zgonik)

Losio, Paolo Antonio

"Charge Transport and Mirrorless Lasing in Organic Semiconductors"

ETH Nr. 17492 (Prof. Dr. P. Günter & Prof. Dr. B. Batlogg & Prof. Dr. J. Blatter)

Ruiz Brunner, Blanca Estela

"Development of Organic Nonlinear Optical Crystals for Integrated Optics and THz Generation"

ETH Nr. 17514 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter & PD Dr. Ch. Bosshard)

Rezzonico, Daniele

"Microring Modulators in Electro-optic Polymers"

ETH Nr. 17570 (Prof. Dr. P. Günter & Prof. Dr. U.W. Suter & PD Dr. Ch. Bosshard )

## Diploma Theses in Physics 1987 - 2007

P. Stillhard

”Elektro-optische Eigenschaften von COANP Kristallen und Dünnschichten”  
ETH Zürich, April 1987  
(Prof. Dr. P. Günter)

R. Staub

”Untersuchung von  $\text{KNb}_{1-x}\text{Ta}_x\text{O}_3$  Kristallen für die integrierte Optik”  
ETH Zürich, April 1987  
(Prof. Dr. P. Günter)

G. Surmely

”Linear und nichtlinear optische Eigenschaften von PNP, 2-(N-prolinol)-5-nitropyridin”  
ETH Zürich, März 1988  
(Prof. Dr. P. Günter)

A. Fischer

”Elektrooptische und photorefraktive Eigenschaften von  $\text{Sr}_{0.75}\text{Ba}_{0.25}\text{Nb}_2\text{O}_6$ ”  
ETH Zürich, März 1988  
(Prof. Dr. P. Günter)

J. Keller

”Optische Bistabilität mit einem nematischen Flüssigkristall und photorefraktiver Verstärkung in  $\text{KNbO}_3$ ”  
ETH Zürich, Oktober 1988  
(Prof. Dr. P. Günter)

J. Arnold

”Beeinflussung der Photorefraktiven Effekte in  $\text{KNbO}_3$  durch äussere elektrische Felder”  
ETH Zürich, Oktober 1988  
(Prof. Dr. P. Günter)

L. Baraldi

”Nichtlinear-optische und elektro-optische Eigenschaften von 2-(N-prolinol)-5-nitropyridin (PNP)”  
ETH Zürich, März 1989  
(Prof. Dr. P. Günter)

M. Küpfer

”Nichtlinear optische Eigenschaften von 2-Docosylamino-5-Nitropyridin (DCANP) Wellenleiterschichten”

ETH Zürich, Oktober 1989

(Prof. Dr. P. Günter)

K. Totland

”Optisch bistabile Kavitäten mit flüssigkristallinen und photorefraktiven Elementen für Bildspeicher”

ETH Zürich, Oktober 1989

(Prof. Dr. P. Günter)

D. Fluck

”Photorefraktiver Effekt in stark reduzierten  $\text{KNbO}_3$ -Kristallen mit sehr hoher Leitfähigkeit”

ETH Zürich, Oktober 1989

(Prof. Dr. P. Günter)

G. Knpfle

”Feldinduzierte Harmonischerzeugung an 2-Docosylamino-5-Nitropyridin (DCANP) und 2-Cyclooctylamino-5-Nitropyridin (COANP)”

ETH Zürich, Oktober 1989

(Prof. Dr. P. Günter)

W. Ferri

”Untersuchung des photorefraktiven Effektes in  $\text{KNbO}_3$  unter gepulster Beleuchtung”

ETH Zürich, Oktober 1989

(Prof. Dr. P. Günter)

N. Saupper

”Linear- und nichtlinear-optische Eigenschaften von N-(4-Nitro-2-pyridinyl)-phenylalaninol (NPPA)”

ETH Zürich, April 1990

(Prof. Dr. P. Günter)

R. Bopp

”Intrakavität-Frequenzverdopplung und Intrakavität-Summenfrequenzerzeugung”

ETH Zürich, April 1990

(Prof. Dr. P. Günter)

H. Ammann

”Photorefraktive Effekte in 2-Cyclooctylamino-5-Nitropyridin (COANP) dotiert mit 7,7,8,8,-Tetracyanochinodimethan (TCNQ)”

ETH Zürich, Oktober 1990

(Prof. Dr. P. Günter)

M. Duelli

”Aufbau und Untersuchung eines optischen Assoziativspeichers”

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”Photorefraktive und elektro-optische Eigenschaften von  $\text{Bi}_4\text{Ge}_3\text{O}_{12}$  im ultravioletten Spektralbereich”

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Ph. Prtre

”Nichtlinear optische Suszeptibilitäten organischer Moleküle und Kristalle bei der Wellenlänge  $1,9 \mu\text{m}$ ”

ETH Zürich, Oktober 1990

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M. Rossi

”Nichtlinear optische Effekte in gepolten Seitenkettenpolymeren”

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Th. Borer

”Nichtlineare Optik und Wellenleitung in 2-Docosylamino-5-Nitropyridin (DCANP) Langmuir-Blodgett (LB) Filmen”

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U. Bertele

”Zeitaufgelöste Messungen des Aufbaus und Zerfalls photorefraktiver Gitter in reduzierten  $\text{KNbO}_3$ -Kristallen”

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R. Schlessler

R. Schlessler: "Optische und elektro-optische Eigenschaften von 4'-Nitrobenzylidene-3-acetamino-4-methoxyaniline (MNBA)"

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Y. Schumacher

"Kristallzüchtung von COANP (2-Cyclooctylamino-5-nitropyridin) dotiert mit TCNQ (7,7,8,8-Tetracyanquinodimethan)"

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M. Bopp

"Photorefraktive Untersuchungen im ultravioletten Spektralbereich in undotierten LiNbO<sub>3</sub>- und KD<sub>2</sub>PO<sub>4</sub>-Kristallen"

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H. Klepel

"Beobachtung optisch induzierter Kohärenztransferprozesse mittels zweidimensionaler Spektroskopie"

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W. Baumann

"Linear und nichtlinear optische Eigenschaften von 21'-Docosenyl-2-Amino-5-Nitropyridin-(VECANP)-Wellenleiterschichten"

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B. Binder

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St. Altner

”Kohärente Spinphänomene im Cäsium-Grundzustand”

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J. Moll

”Optische Frequenzverdopplung in ein- und zweidimensionalen Wellenleitern in  $\text{KNbO}_3$ ”

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P. Nosbaum

”Messung von nichtlinear optischen Suszeptibilitäten dritter Ordnung in organischen Molekülen und Kristallen bei der Wellenlänge  $1.9 \mu\text{m}$ ”

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L. Jaussi

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P. Rogin

”Photorefraktive Effekte in  $\text{KNbO}_3$ -Kristallen mit Band-zu-Band-Anregung durch ultraviolettes Licht”

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M. J. Ewart

”Characterisation of Photoexcited Electrons in Reduced  $\text{KNbO}_3$  with Pulsed Photorefractive Effects”

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A. Bohren

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S. Krucker

”Untersuchungen & Beschreibungen von Photorefraktivem  $\text{KNbO}_3$  im Roten & NIR”

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A. Caprez

”Fixierung von Fourierhologrammen in  $\text{LiNbO}_3$  und Anwendung auf optische Assoziativspeicher”

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Th. Pliska

”Frequenzverdopplung von Laserdioden in  $\text{KNbO}_3$  Streifenwellenleitern”

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J. Steinfort

”Scanning Force Microscopy of Cadmium Arachidate Langmuir-Blodgett Films with Submolecular Resolution”

ETH Zürich, Dezember 1992

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F. Brechlin

”Photorefraktive Eigenschaften von ionenimplantierten  $\text{KNbO}_3$ -Wellenleitern”

ETH Zürich, März 1993

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R. Ducret-Stich

”Optische und nichtlinear optische Eigenschaften von 4’-Dimethylamino-N-methyl-4-stilbazolium Tosylat (DAST)”

ETH Zürich, März 1993

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D. Erni

”Hochtemperaturreduktion von  $\text{KNbO}_3$  Kristallen für photorefraktive Anwendungen”

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J. Weiss

”Zweistrahlekopplung in photorefraktiven ionenimplantierten  $\text{KNbO}_3$  Wellenleitern”

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F. Mayer

”Frequenzverdopplungs- und Dämpfungseigenschaften von  $\text{KNbO}_3$  Wellenleitern”

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L.-D. Piveteau

”L’origine de la non-linarit optique des verres dopes au  $\text{Cd}(\text{S},\text{Se})$ ”

ETH Zürich, März 1994

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M. Aufdenblatten

”Frequenzverdopplung in speziell orientierten  $\text{KNbO}_3$  Streifenwellenleitern”

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M. Friedrich

”Ferroelektrika und Kraftmikroskopie”

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”Elektro-optische Wellenleitermodulatoren auf  $\text{KNbO}_3$ ”

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”Wachstum und Charakterisierung von organischen nichtlinear optischen Dünnschichten”

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R. Spreiter

”Bestimmung der nichtlinearen Brechungsindizes  $n_2$  in  $\text{KNbO}_3$  und Molekularkristallen”

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”Photorefraktive räumliche Solitonen in  $\text{KNbO}_3$ ”

ETH Zürich, März 1996

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M. Lardelli

”Zeitaufgelöste Untersuchung der Photorefraktion in eisen- und rhodium-dotiertem  $\text{KNbO}_3$ ”

ETH Zürich, Juli 1996

(Prof. Dr. P. Günter)

M. Pouchon

”Photorefraktiver Effekt in protonenimplantierten  $\text{KNbO}_3$  Wellenleitern”

ETH Zürich, Juli 1996

(Prof. Dr. P. Günter)

M. Wiki

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ETH Zürich, September 1996  
(Prof. Dr. P. Günter)

M. Fierz  
"Photorefractive Effect and Photoconductivity in 4-N,N-Dimethylamino-4'-N'-Methylstilbazolium Toluene-p-Sulfonate (DAST) Crystals"  
ETH Zürich, Oktober 1996  
(Prof. Dr. P. Günter)

W. Mazerant  
"Bestimmung der nichtlinear optischen Eigenschaften 3. Ordnung von polaren Materialien"  
ETH Zürich, Oktober 1996  
(Prof. Dr. P. Günter)

St. Fischer  
"Nichtlinear optische Eigenschaften 3. Ordnung von 4-N,N-Dimethylamino 4'-N'-Methyl-4-Stilbazolium Tosylat (DAST)"  
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(Prof. Dr. P. Günter)

P. Messmer  
"Zweidimensionale Photorefraktive Solitonen und Lichtinduzierte Wellenleiter in KNbO<sub>3</sub>"  
ETH Zürich, September 1997  
(Prof. Dr. P. Günter)

H. Wyss  
"Frequenzverdopplung von Laserdioden mit Wellenlängenstabilisierung durch externe Bragg-Gitter"  
ETH Zürich, März 1998  
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"Ultrafast Electron Dynamics in Silver Films and Nanoparticles"  
ETH Zürich, März 1998  
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M. Hbscher  
"Numerische Simulation der Frequenzverdopplung in KNbO<sub>3</sub> Wellenleit-

ern”

ETH Zürich, Oktober 1998  
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”Photorefractive Holographic Storage System with High Read-Out Frame-Rate”

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”Characterization of Electron-Transport and Polaron-Models in  $\text{Bi}_{12}\text{SiO}_{20}$ ”

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nichtlinear optischen Polymeren”

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"Charge Injection and Transport in Alq<sub>3</sub>"  
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"Photorefractive Properties of a Polymer Composite Doped with a Ring-Locked Chromophore"  
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"Herstellung von Wellenleitern in DAST-Kristallen"  
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"Localized States in a Liquid Crystal Light Valve Optical System"  
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"Quantum Wire Light Emitting Diode"  
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”Hole Mobility of 2.7-Bis(diarylamino)-9.9-Dimethylfluorenes (TPF) Doped into Poly(styrene)”

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”Solid State White Light Laser Source”

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”Interband Photorefractive Effect in Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub>”



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M. Stillhart  
"Characterization of LiNbO<sub>3</sub> Waveguides Fabricated by Crystal Ion Slicing"  
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"Terahertz Spectroscopy of Dielectric Materials and Organic Thin Films"  
ETH Zürich, July 2004  
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"Nonvolatile Holographic Gratings in the Surface Region of Mg Doped LiTaO<sub>3</sub> Induced by Deep UV Light"  
ETH Zürich, September 2004  
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"Femtosecond Ablation of KNbO<sub>3</sub>"  
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F. Brunner  
"Fast KNbO<sub>3</sub> Integrated Light Modulator for Telecommunication Applications"  
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"Double Phase Conjugate Mirror for Laser Beam Clean up"  
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"Electro-Optic Polymeric Microring Resonators for Very Large Scale Integrated Optical Modulation"  
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"Integrated Electro-Optical UV Light Modulator in BBO"  
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"Investigation of Photorefractive Effects at  $\lambda = 1.3 \mu\text{m}$  in Te-doped  $\text{Sn}_2\text{P}_2\text{S}_6$ "  
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"Herstellung und Charakterisierung von Feldeffekttransistoren basierend auf organischen Dünnschichten"  
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"Configurationaly Locked Polyene Crystals for Integrated Electro-optics"  
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"Self-Assembled Nonlinear Optical Films"

ETH Zürich, November 2006  
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P. Marty  
"High-power Infrared Laser Beam Cleanup with Te:Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub>"  
ETH Zürich, März 2007  
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K. Kruse  
"Development of an Experimental Setup for Pulsed Terahertz Spectroscopy"  
ETH Zürich, Mai 2007  
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