

## Publication List – Prof. Dr. Peter Lemmens - 1/2012

- 186 refereed publications including 10 review articles and books (see **review**)
- Hirsch Index:  $h \approx 23$ , more than 1700 total citations, 12.5 av. citations per item (ISI Web of Science, 4.3.2010).

### Preprints

184) *Tailoring defect structure and optical absorption of porous anodic aluminum oxide membranes*, H.-D. Yan, P. Lemmens, D. Wulferding, J. Shi, K. D. Becker, C. T. Lin, A. Lak and M. Schilling, submitted to Journ. Mat. Chem. Phys. (2011).

193) *Dynamical Dzyaloshinsky-Moriya interaction in  $KCuF_3$ : Raman evidence for an antiferrodistortive lattice instability*, V. Gnezdilov, J. Deisenhofer, P. Lemmens, D. Wulferding, O. Afanasiev, P. Ghigna, A. Loidl, A. Yeremenko, cond-mat/1003.1666 (2010).

191) *Ligand Exchange at the Liquid-Liquid Interface: Preparation of Water Soluble L-arginine Capped CdSe/Zns QDs and their Interaction with Synthetic DNA*, A. Giri, N. Goswami, P. Lemmens and S. K. Pal, preprint (2011).

190) *Crossover from coherent to incoherent scattering in the spin orbit dominated compound  $Sr_2IrO_4$* , M. F. Cetin, P. Lemmens, V. Gnezdilov, D. Wulferding, D. Menzel, T. Takayama, K. Ohashi, and H. Takagi, preprint (2011).

189) *Analysis of low-frequency IR spectrum of the cubic noncentrosymmetric ferrimagnet  $Cu_2OSeO_3$* , V. Kurnosov, V. Tsapenko, V. Gnezdilov, P. Lemmens, and H. Berger, preprint (2011).

188) *Tuning the spin dynamics of kagome systems*, D. Wulferding, P. Lemmens, H. Yoshida, Y. Okamoto, and Z. Hiroi, subm. to Jour. Phys.: Cond. Matter. (2011).

187) *New Perspectives for Cuprate Research: The CLBLCO Single Crystal*, G. Drachuck, M. Shay, G. Bazalitsky, Z. Salman, A. Amato, Ch. Niedermayer, D. Wulferding, P. Lemmens, and A. Keren, preprint (2011).

## Refereed Publications / Publikationen

### 2012

186) *High-density array of Au nanowires coupled by plasmon modes*, Hongdan Yan, Peter Lemmens, Johannes Ahrens, Martin Bröring, Aidin Lak, Meinhard Schilling, China Physics, in print (2012).

185) *Extension of the zinc paratacamite phase diagram - Probing the effect of spin vacancies in a  $S = 1/2$  kagome antiferromagnet*, M. A. de Vries, D. Wulferding, P. Lemmens, J. S. Lord, A. Harrison, A. Olariu, F. Bert, and P. Mendels, Phys. Rev. B **85**, 014422 (2012).

184) *Coherent Manipulation of Electron Spins in  $Cu_3$  Spin Triangle Molecule Deposited in Nanoporous Silicon*, K.-Y. Choi, Zh. Wang, H. Nojiri, H. v. Tol, P. Kumar, P. Lemmens, U. Kortz, N. S. Dalal, Phys. Rev. Lett., in print (2012).

### 2011

183) *Low temperature magnetic and thermal properties of the frustrated two-dimensional  $S=1$  compound  $Ni_5(TeO_3)_4Cl_2$* , E. Khatsko, S. V. Nizhankovskii, Gnatchenko, A. Zaleski, P. Lemmens, and H. Berger, Journ. Low. Temp. Physics (FNT) **37**, 1050 (2011).

182) *Helical fluctuations in the Raman response of the topological insulator  $Bi_2Se_3$* , V. Gnezdilov, Yu. G. Pashkevich, H. Berger, E. Pomjakushina, K. Conder, P. Lemmens, Phys. Rev. B **84**, 195118 (2011).

181) *Crystal Structure and Magnetic Properties of Two New Antiferromagnetic Spin Dimer Compounds;  $FeTe_3O_7X$  ( $X = Cl, Br$ )*, D. Zhang, R. K. Kremer, P. Lemmens, K.-Y. Choi, J. Liu, M.-H. Whangbo, H. Berger, Y. Skourski, M. Johnsson, Journ. Inorg. Chem. **50**, 12877 (2011).

180) *Magnetic properties of the antiferromagnetic spin- $1/2$  chain system  $\beta$ - $TeVO_4$* , Yu. Savina, A. Bludov, V. Pashchenko, S.L. Gnatchenko, P. Lemmens, and H. Berger, Phys. Rev. B **84**, 104447 (2011).

179) *Anomalous low-energy phonons in nearly tetragonal  $BiFeO_3$  thin films*, K.-Y. Choi, S. H. Do, P. Lemmens, D. Wulferding, C. S. Woo, J. H. Lee, K. Chu, and C.-H. Yang, Phys. Rev. B **84**, 132408 (2011).

178) *Coupled spin-lattice fluctuations in a compound with orbital degrees of freedom: the Cr based dimer system  $Sr_3Cr_2O_8$* , D. Wulferding, P. Lemmens, K.-Y. Choi, Yu. G. Pashkevich, V. Gnezdilov, J. Deisenhofer, D. Quintero-Castro, A.T.M. N. Islam, and B. Lake, Phys. Rev. B **84**, 064419 (2011).

177) *Magnetoresistivity in  $CoFe_2O_4$ - $BaTiO_3$  composites produced by Spark Plasma Sintering*, M. Stingaciu, R. K. Kremer, P. Lemmens, and M. Johnsson, Appl. Phys. Lett. **110**, 044903 (2011).

176) *Magneto-structural transition in a frustrated magnet at high fields*, V. Tsurkan, S. Zherlitsyn, V. Felea, S. Yasin, Yu. Skourski, J. Deisenhofer, H.-A. Krug von Nidda, P. Lemmens, J. Wosnitza, and A. Loidl, Phys. Rev. Lett. **106**, 247202 (2011).

175) *Anomalous optical phonons in  $FeTe$  pnictides: spin state, magnetic order, and lattice anharmonicity*, V. Gnezdilov, Yu. Pashkevich, P. Lemmens, A. Gusev, K. Lamonova, T.

Shevtsova, I. Vitebskiy, O. Afanasiev, S. Gnatchenko, V. Tsurkan, J. Deisenhofer, and A. Loidl, Phys. Rev. B **83**, 245127 (2011).

174) *Evidence for local lattice distortions in giant magnetocapacitive CdCr<sub>2</sub>S<sub>4</sub>*, V. Gnezdilov, P. Lemmens, Yu. G. Pashkevich, P. Scheib, Ch. Payen, K. Y. Choi, J. Hemberger, A. Loidl, V. Tsurkan, Phys. Rev. B **84**, 045106 (2011).

173) *Magnetic phase diagram of multiferroic MnWO<sub>4</sub> probed by ultrasound*, V. Felea, P. Lemmens, Yasin, S. Zherlitsyn, K.Y. Choi, C.T. Lin, Ch. Payen, J. Phys.: Condens. Matter **23**, 216001 (2011).

172) *Interplay of Spin and Lattice Degrees of Freedom in the Frustrated Antiferromagnet CdCr<sub>2</sub>O<sub>4</sub>: High-field and Temperature Induced Anomalies of the Elastic Constants*, S. Bhattacharjee, S. Zherlitsyn, O. Chiatti, A. Sytcheva, J. Wosnitzer, R. Moessner, M.E. Zhitomirsky, P. Lemmens, V. Tsurkan, A. Loidl, Phys. Rev. B **83**, 184421 (2011).

171) *Critical spin dynamics of the S=1/2 spin chain compound CuSe<sub>2</sub>O<sub>5</sub>*, K.-Y. Choi, P. Lemmens, and H. Berger, Phys. Rev. B **83**, 174413 (2011).

170) **Editors Suggestion** *Weak first order quantum phase transition in a spin tetrahedron system without lattice contribution*, X. Wang, K. Syassen, M. Johnsson, R. Moessner, K.-Y. Choi, and P. Lemmens, Phys. Rev. B **83**, 134403 (2011).

169) *Single crystal growth and effect of doping on structural, transport and magnetic properties of A<sub>1-x</sub>K<sub>x</sub>Fe<sub>2</sub>As<sub>2</sub> (A=Ba, Sr)*, G. L. Sun, D. L. Sun, M. Konuma, P. Popovich, A. Boris, J. B. Peng, K.-Y. Choi, P. Lemmens, and C. T. Lin, J. of Supercond. and Novel Magn. **24**, 1773 (2011).

168) **review** *Optical Techniques for Systems with Competing Interactions*, J. Deisenhofer and P. Lemmens, in "Introduction to Highly Frustrated Magnetism", Eds. C. Lacroix, P. Mendels and F. Mila, Springer Series in Solid-State Sciences, 2011, Volume **164**, Part 2, 107-128, Springer, New York.

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167) *Interplay of thermal and quantum spin fluctuations in the kagome lattice compound Herbertsmithite*, D. Wulferding, P. Lemmens, P. Scheib, J. Roeder, P. Mendels, Sh. Chu, T.-H. Han, Y. S. Lee, Phys. Rev. B **82**, 144412 (2010).

166) *Inhomogeneous magnetic cluster states in the magnetoresistance material Lu<sub>2</sub>V<sub>2</sub>O<sub>7</sub>*, K.-Y. Choi, W. Zhenxing, P. Lemmens, H. D. Zhou, J. van Tol, N. Dalal, and C. R. Wiebe, Phys. Rev. B **82**, 054430 (2010).

165) *Structural anomalies and the orbital ground state in FeCr<sub>2</sub>S<sub>4</sub>*, V. Tsurkan, O. Zaharko, F. Schrettle, Ch. Kant, J. Deisenhofer, H.-A. Krug von Nidda, V. Felea, P. Lemmens, J. Groza, D. Quach, F. Gozzo, and A. Loidl, Phys. Rev. B **81**, 184426 (2010).

164) *Magnetoelectricity in the ferrimagnetic Cu<sub>2</sub>OSeO<sub>3</sub>: symmetry analysis and Raman scattering study*, V.P. Gnezdilov, K.V. Lamonova, Y.G. Pashkevich, P. Lemmens, H. Berger, F. Bussy, S.L. Gnatchenko, Journ. Low. Temp. Physics (FNT), **36**, N 6, 688 (2010).

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K.-Y. Choi, P. Lemmens, I. Eremin, G. Zwicknagl, H. Berger, G. L. Sun, D. L. Sun, and C. T. Lin, *J. Phys.: Condens. Matter* **22**, 115802 (2010).

162) *Synthesis, crystal structure and magnetic properties of the copper selenite chloride:  $Cu_5(SeO_3)_4Cl_2$* , D. Zhang, H. Berger, R. K. Kremer, D. Wulferding, P. Lemmens, M. Johnsson, *Inorg. Chem.* **49**, 9683-9688 (2010).

161) *Microwave absorption in the frustrated ferrimagnet  $Cu_2OSeO_3$* , M. I. Kobets, E. N. Khatsko, S. L. Gnatchenko, A. I. Rykova, P. Lemmens, D. Wulferding, H. Berger, *Jour. Low. Temp. Physics (FNT)* **36**, 223 (2010).

160) *Inside Cover: A Molecular Magnet Confined in the Nanocage of a Globular Protein*, R. K. Mitra, P. K. Verma, D. Wulferding, D. Menzel, T. Mitra, A. M. Todea, P. Lemmens, A. Müller, S. K. Pal, *ChemPhysChem* **11**, 318 (2010).

159) *A Molecular Magnet confined in the Nanocage of a Globular Protein*, S. Pal, R. K. Mitra, P. K. Verma, D. Wulferding, D. Menzel, T. Mitra, A. M. Todea, P. Lemmens, A. Müller, *ChemPhysChem* **11**, 389 (2010).

158) *Light Harvesting Semiconductor Core-Shell Nanocrystal: Ultrafast Charge transport Dynamics of CdSe-ZnS Quantum Dots*, A. Makhal, H.-D. Yan, P. Lemmens and S. K. Pal, *J. Phys. Chem. C* **114**, 627 (2010).

157) *Lattice Instabilities in the Frustrated Magnet  $CdCr_2O_4$ : an Ultrasonic Study*, S. Zherlitsyn, O. Chiatti, A. Sytcheva, J. Wosnitza, S. Bhattacharjee, R. Moessner, M. Zhitomirsky, P. Lemmens, V. Tsurkan, A. Loidl, *Journ. Low Temp. Phys.* **159**, 134 (2010).

156) *Manipulation of Spontaneous Emission Dynamics of Organic Dyes in the Porous Silicon Matrix*, A. Makhal, S. S. Sinha, P. Kumar, P. Lemmens and S. K. Pal, *Journ. of Fluoresc.* **20**, 283 (2010).

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155) *Interplay of electronic correlations and lattice instabilities in  $BaVS_3$* , K.-Y. Choi, D. Wulferding, H. Berger, and P. Lemmens, *Phys. Rev. B* **80**, 245108 (2009).

154) *Separation of the oxide and halide part in the oxohalide  $Fe_3Te_3O_{10}Cl$  due to high Lewis acidity of the cations*, D. Zhang, M. Johnsson, H. Berger, R. K. Kremer, D. Wulferding, and P. Lemmens, *Inorganic Chemistry* **48**, 6599 (2009).

153) *Effect of HF concentration on physical and electronic properties of electrochemically formed nano-porous silicon*, P. Kumar, P. Lemmens, M. K. Ghosh, F. Ludwig, and M. Schilling, *Journ. of Nanomaterials* **2009**, 728957 (2009).

152) *Spectral sensitive phonon wipeout in a two-site  $Fe^{2+}$  coordination polymer*, V. Gnezdilov, P. Lemmens, P. Scheib, M. Ghosh, Yu.G. Pashkevich, H. Paulsen, V. Schünemann, J. A. Wolny, G. Agustí, J. A. Real, *Phys. Rev. B* **79**, 045122 (2009).

151) *Magnetic Properties of the Layered Cobaltite  $NdBaCo_2O_{5.50}$* , A. Jarry, H. Luetkens, Y.G. Pashkevich, M. Stingaciu, E. Pomjakushina, K. Conder, P. Lemmens, and H.-H. Klauss, *Physica B* **404**, 765 (2009).

150) *Anomalous frequency and intensity scaling of collective and local modes in a coupled spin tetrahedra system*, K. Y. Choi, H. Nojiri, N. S. Dalal, H. Berger, W. Brenig, P. Lemmens, Phys. Rev. B **79**, 024416 (2009).

149) *Iron/Nickel nanowire growth in Anodic Aluminum Oxide templates: Transfer of length scales and periodicity*, H.D. Yan, P. Lemmens, H. Dierke, S.C. White, F. Ludwig, M. Schilling, Journ. Phys.: Conf. Series **145**, 012079 (2009).

148) *Raman Scattering Study of a Two-Dimensional  $S = 1$  Quantum Spin System  $Ni_5(TeO_3)_4Cl_2$* , A.V. Peschanskii, V.P. Gnezdilov, V.I. Fomin, V.V. Eremenko, P. Lemmens, K.-Y. Choi, and H. Berger, Ukrainian Physical Journ. **45**, 205 (2009).

147) *Spin correlations and spin-phonon coupling in the frustrated pyrochlore magnets  $CdCr_2O_4$  and  $ZnCr_2O_4$* , Ch. Kant, J. Deisenhofer, T. Rudolf, F. Mayr, F. Schrettle, V. Tsurkan, D. Wulferding, V. Gnezdilov, P. Lemmens, A. Loidl, Phys. Rev. B **80**, 214417 (2009).

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146) *Lattice and electronic anomalies of  $CaFe_2As_2$  studied by Raman spectroscopy*, K.-Y. Choi, D. Wulferding, P. Lemmens, S. L. Bud'ko, and P. C. Canfield, Phys. Rev. B **78**, 212503 (2008).

145) *Lattice anomalies and magnetic excitations of the spin web compound  $Cu_3TeO_6$* , K.Y. Choi, P. Lemmens, E.S. Choi, and H. Berger, Journ. Phys.: Cond. Matter **20**, 505214 (2008).

144) *Magnetic crossover and complex magnetic excitation spectrum of the ferromagnetic/antiferromagnetic spin-1/2 chain system  $\alpha$ - $TeVO_4$* , V. Gnezdilov, P. Lemmens, A. A. Zvyagin, V. O. Chervanovskii, K. Lamonova, Yu. G. Pashkevich, R. K. Kremer, H. Berger, Phys. Rev. B **78**, 184407 (2008).

143) *Tuning the pore wall morphology of mesoporous silicon from branchy to smooth, tubular by chemical treatment*, P. Kumar, T. Hoffman, P. Huber, P. Scheib, and P. Lemmens, Journ. Appl. Physics **103**, 024303 (2008).

142) *Spin state and orbital moments across the metal-insulator-transition of  $REBaCo_2O_{5.5}$  investigated by XMCD*, M. Lafkioti, E. Goering, S. Gold, G. Schütz, S. N. Barilo, S.V. Shiryayev, G. L. Bychkov, V. Hinkov, P. Lemmens, J. Deisenhofer, A. Loidl, New Journ. Phys. **10**, 123030 (2008).

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140) *Thermodynamic properties of the kagome-like compound  $YBaCo_{4-x}Zn_xO_7$  with magnetic dilution*, M. Markina, T. Vasilchikova, A. Vasiliev, P. Lemmens, M. Valldor, Journ. Magn. Magn. Mat. **320**, e434 (2008).

139) *Magnetic and resonance properties of the two-dimensional  $S=1$  compound  $(Ni_5(TeO_3)_4Cl_2)$  with frustrated geometry*, S. Gnatchenko, M. Kobets, E. Khatsko, M. Baran, R. Szymczak, P. Lemmens, and H. Berger, Low. Temp. Phys. **34**, Nr 8, 630 (2008).

138) *Microscopic Evidence of Spin-State Order and Spin State Phase Separation in Layered Cobaltites  $RBaCo_2O_{5.5}$  with  $R=Y, Tb, Dy, \text{ and } Ho$* , H. Luetkens, M. Stingaciu,

Yu. G. Pashkevich, K. Conder, E. Pomjakushina, A. A. Gusev, K. V. Lamonova, P. Lemmens, and H.-H. Klauss, Phys. Rev. Lett. **101**, 017601 (2008).

137) **review** *Perovskites and thin films – crystallography and chemistry*, M. Johnsson and P. Lemmens, J. Phys.: Cond. Matter **20**, 264001 (2008).

136) *Anomalous orbital dynamics in (La,Sr)MnO<sub>4</sub> observed by Raman spectroscopy*, K.-Y. Choi, P. Lemmens, D. Heydhausen, G. Güntherodt, C. Baumann, R. Klingeler, P. Reutler, and B. Büchner, Phys. Rev. B **77**, 064415 (2008).

135) *Electron-phonon interaction in the lamellar cobaltate Na<sub>x</sub>CoO<sub>2</sub>*, A. Donkov, M. M. Korshunov, I. Eremin, P. Lemmens, V. Gnezdilov, F. C. Chou, C. T. Lin, Phys. Rev. B **77**, 100504(R) (2008).

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134) *Comparative investigation of the coupled tetrahedra quantum spin systems Cu<sub>2</sub>Te<sub>2</sub>O<sub>5</sub>X<sub>2</sub>, X=Cl, Br and Cu<sub>4</sub>Te<sub>5</sub>O<sub>12</sub>Cl<sub>4</sub>*, R. Valenti, T. Saha-Dasgupta, H. O. Jeschke, B. Ramahan, H. Rosner, P. Lemmens, R. Takagi, M. Johnsson, Physica **C 460**, 462 (2007).

133) *Spin state transformation of a 3d ion in the pyramidal environment and under lattice distortions*, E.S. Zhitlukhina, K.V. Lamonova, S.O. Orel, P. Lemmens, and Yu.G. Pashkevich, Journ. Phys.: Cond. Matter **19**, 156216 (2007).

132) *Oxygen Isotope Effect on the Magnetic Phase Transition Temperatures of the Layered Cobaltite HoBaCo<sub>2</sub>O<sub>5.47</sub>*, H. Luetkens, M. Stingaciu, Y.G. Pashkevich, P. Lemmens, E. Pomjakushina, K. Conder, D. Cheptiakov, H.-H. Klauss, Journ. Magn. Mag. Mat. **310**, 1566 (2007).

131) *Chemical Pressure Effect on the Magnetic Order in the Weakly Coupled Spin Tetrahedra System Cu<sub>2</sub>Te<sub>2</sub>O<sub>5</sub>(Br<sub>x</sub>Cl<sub>1-x</sub>)<sub>2</sub>*, C. Mennerich, H.-H. Klauss, D. Mienert, A. Bosse, F.J. Litterst, P. Lemmens, D. Baabe, H. Luetgens, R. Scheuermann, M. Johnsson, Journ. Phys. Soc. Jpn. **76A**, 104-105 (2007).

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