
List of Publications

2019

- (50) J. Mahl, S. Nepll, F. Roth, A. Shavorskiy, N. Huse, H. Bluhm, W. Eberhardt & O. Gessner "Real-time probing of charge-transfer induced interfacial fields in a dye-semiconductor system using time-resolved XPS" *in preparation*, (2019)
- (49) F. Roth, J. Mahl, W. Yang, J. Guo, S. Molodtsov, O. Gessner & W. Eberhardt "Dynamic Jahn-Teller splitting in C₆₀ probed by time-resolved transient X-ray absorption spectroscopy" *in preparation*, (2019)
- (48) J. Mahl, S. Nepll, F. Roth, M. Borgwardt, C. Saladrigas, B. Toulson, T. Rahman, H. Bluhm, J. Guo, W. Yang, N. Huse, W. Eberhardt & O. Gessner "Decomposing electronic and lattice contributions in optical pump-X-ray probe transient inner-shell absorption spectroscopy of CuO" *submitted to Faraday Discuss.*, (2019)
- (47) I. Petrenko, S. Zoltowska-Aksamitowska, P. Simon, M. Motylenko, C. Schrimpf, D. Rafaja, F. Roth, K. Kummer, E. Brendler, O. Pokrovsky, R. Galli, M. Wysokowski, H. Meissner, E. Niederschlag, Y. Joseph, S. Molodtsov, A. Ereskovsky, V. Sikov, S. Nekipelov, O. Petrova, O. Volkova, M. Bertau, M. Kraft, A. Rogalev, M. Kopani, T. Jesioniowski & H. Ehrlich "Extreme Biomimetics: from bath sponge through turbostratic graphite to nanostructured 3D copper-based catalyst" *submitted Nat. Mat.*, (2019)
- (46) F. Roth, S. Nepll, A. Shavorskiy, T. Arion, J. Mahl, H. O. Seo, H. Bluhm, Z. Hussain, O. Gessner & W. Eberhardt "Efficient Charge Generation from Triplet Excitons in Metal-Organic Heterojunctions" *Phys. Rev. B.*, **99**, 020303(R) (2019)

2018

- (45) T. Arion, W. Eberhardt, J. Feikes, A. Gottwald, P. Goslawski, A. Hoehl, H. Kaser, M. Kolbe, J. Li, C. Lupulescu, M. Richter, M. Ries, F. Roth, M. Ruprecht, T. Tydecks & G. Wüstefeld "Transverse resonance island buckets for synchrotron-radiation based electron time-of-flight spectroscopy" *Rev. Sci. Instr.*, **89**, 103114 (2018)
- (44) M. K. Rabchinskii, A. T. Dideikin, D. A. Kirilenko, M. V. Baidakova, V. V. Shnitov, F. Roth, S. V. Konyakhin, N. A. Besedina, S. I. Pavlov, R. A. Kuricyn, N. M. Lebedeva, P. N. Brunkov & A. Ya. Vul "Facile reduction of graphene oxide suspensions and films using glass wafers" *Sci. Rep.*, **8**, 14154 (2018)
- (43) T. Szatkowski, K. Koczyński, M. Motylenko, H. Borrmann, B. Mania, M. Graś, G. Lota, V. V. Bazhenov, D. Rafaja, F. Roth, J. Weise, E. Langer, M. Wysokowski, S. Żółtkowska-Aksamitowska, S.L. Molodtsov, J. Hubálková, C. G. Aneziris, Y. Joseph, H. Ehrlich & T. Jesionowski "Extreme Biomimetics: Carbonized 3D spongin scaffold as a support for nanostructured manganese(IV) oxide and its electrochemical applications" *Nano Res.*, **11**, 4199 (2018)

- (42) [F. Roth](#), T. Arion, H. Kaser, A. Gottwald & W. Eberhardt "Angle resolved Photoemission from Ag and Au single crystals: Final state lifetimes in the attosecond range"*J. Electron. Spectrosc. Relat. Phenom.*, **224**, 84 (2018)
- (41) K. Witte, I. Mantouvalou, R. Sánchez-de-Armas, H. Lokstein, J. Lebendig-Kuhla, A. Jonas, [F. Roth](#), B. Kanngießer & H. Stiel "On the Electronic Structure of Cu-Chlorophyllin and its Breakdown Products—a Carbon K-edge X-ray Absorption Spectroscopy Study"*J. Phys. Chem. B*, **122**, 1846 (2018)

2017

- (40) S. Halilov, E. Gorelov, M. Izquierdo, A. Yaroslavtsev, V. Aristov, P. Moras, P.M. Sheverdyeva, S.Kr. Mahatha, [F. Roth](#), A. Lichtenstein & S.L. Molodtsov "Surface, final state, and spin effects in the valence-band photoemission spectra of LaCoO₃ (001)"*Phys. Rev B*, **96**, 205144 (2017)

2016

- (39) E. Darlatt, B. Muhsin, R. Rösch, C. Lupulescu, [F. Roth](#), M. Kolbe, A. Gottwald, H. Hoppe & M. Richter "Irradiation-induced degradation of PTB7 investigated by valence band and S2p photoelectron spectroscopy", Contribution to the Focus Collection: Focus on Organic Photovoltaics *Nanotechnology*, **27**, 324005 (2016)
- (38) [F. Roth](#), C. Lupulescu, E. Darlatt, A. Gottwald & W. Eberhardt "Angle resolved Photoemission from Cu single crystals: Known facts and a few surprises about the photoemission process", Contribution to the Special Issue: Electronic structure and function from state-of-the-art spectroscopy and theory *J. Electron. Spectrosc. Relat. Phenom.*, **208**, 2 (2016)
- (37) H.O. Seo, T. Arion, [F. Roth](#), D. Ramm, C. Lupulescu & W. Eberhardt "Improving the efficiency of high harmonic generation (HHG) by Ne-admixing into a pure Ar gas medium"*Appl. Phys. B*, **122**, 70 (2016)

2015

- (36) [F. Roth](#) & M. Knupfer "Low energy exciton pocket at finite momentum in tetracene"*Europhys. Lett.*, **112**, 37004 (2015)
- (35) [F. Roth](#), M. Herzig, C. Lupulescu, E. Darlatt, A. Gottwald, M. Knupfer & W. Eberhardt "Electronic properties of Mn-Phthalocyanine - C₆₀ bulk heterojunctions: combining photoemission and electron energy-loss spectroscopy"*J. Appl. Phys.*, **118**, 185310 (2015)
- (34) J. Fink, A. Charnukha, E. D. L. Rienks, Z. H. Liu, S. Thirupathiah, I. Avigo, [F. Roth](#), H. S. Jeevan, P. Gegenwart, M. Roslova, I. Morozov, S. Wurmehl, U. Bovensiepen, S. Borisenko, M. Vojta & B. Büchner "Non-Fermi-liquid scattering rates and anomalous band dispersion in ferropnictides"*Phys. Rev. B*, **92**, 201106(R) (2015)
- (33) [F. Roth](#) & M. Knupfer "Impact of potassium doping on the electronic structure of tetracene and pentacene: an electron energy-loss study" *J. Chem. Phys.*, **143**, 154708 (2015)
- (32) T. Arion, S. Neppel, [F. Roth](#), A. Shavorskiy, O. Gessner, H. Bluhm, Z. Husain & W. Eberhardt "Site-specific probing of charge transfer dynamics in organic photovoltaics"*Appl. Phys. Lett.*, **106**, 121602 (2015)

- (31) [F. Roth](#) & M. Knupfer “Electronic excitation spectrum of doped organic thin films investigated using electron energy-loss spectroscopy”, Contribution to the Special issue in honor of Prof. Nobuo Ueno: Progress in study of organic electronics by electron spectroscopies *J. Electron. Spectrosc. Relat. Phenom.*, **204**, 23 (2015)

2014

- (30) E. D. L. Rienks, M. Ärrälä, M. Lindroos, [F. Roth](#), W. Tabis, G. Yu, M. Greven & J. Fink “High-Energy Anomaly in the Angle-Resolved Photoemission Spectra of $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_4$: Evidence for a Matrix Element Effect” *Phys. Rev. Lett.*, **113**, 137001 (2014)
- (29) [F. Roth](#), A. König, J. Fink, B. Büchner & M. Knupfer “Electron Energy-Loss Spectroscopy: A versatile tool for the investigations of plasmonic excitations” *J. Electron. Spectrosc. Relat. Phenom.*, **195**, 85 (2014) — Review article
- (28) U. Treske, M. S. Khoshkhoo, [F. Roth](#), M. Knupfer, E. D. Bauer, J. L. Sarrao, B. Büchner & A. Koitzsch “X-ray Photoemission Study of CeTIn_5 ($T = \text{Co, Rh, Ir}$)” *J. Phys.: Condens. Matter*, **26**, 205601 (2014)
- (27) [F. Roth](#), C. Lupulescu, T. Arion, E. Darlatt, A. Gottwald & W. Eberhardt “Electronic properties and morphology of Cu-phthalocyanine - C_{60} composite mixtures” *J. Appl. Phys.*, **115**, 033705 (2014)

2013

- (26) [F. Roth](#), P. Cudazzo, B. Mahns, M. Gatti, J. Bauer, S. Hampel, M. Nohr, A. Schubert, H. Berger, M. Knupfer & A. Rubio “Loss spectroscopy of molecular solids: combining experiment and theory”, Contribution to the Focus Issue “Focus on Novel Materials Discovery” *New J. Phys.*, **15**, 125024 (2013)
- (25) [F. Roth](#), E. Müller, B. Rellinghaus, B. Büchner & M. Knupfer “The electronic excitation spectrum of calcium doped picene: electron energy-loss spectroscopy study” *Phys. Rev. B*, **88**, 205105 (2013)
- (24) E. D. L. Rienks, T. Wolf, K. Koepf, I. Avigo, P. Hlawenka, C. Lupulescu, T. Arion, [F. Roth](#), W. Eberhardt, U. Bovensiepen & J. Fink “Electronic structure and quantum criticality in $\text{Ba}(\text{Fe}_{1-x-y}\text{Co}_x\text{Mn}_y)_2\text{As}_2$, an ARPES study” *Europhys. Lett.*, **103**, 47004 (2013)
- (23) [F. Roth](#), A. König, C. Kramberger, T. Pichler, B. Büchner & M. Knupfer “Challenging the nature of low-energy plasmon excitations in CaC_6 using electron energy-loss spectroscopy” *Europhys. Lett.*, **102**, 17001 (2013)
- (22) [F. Roth](#), B. Mahns, S. Hampel, M. Nohr, H. Berger, B. Büchner & M. Knupfer “Exciton properties of selected aromatic hydrocarbon systems”, Contribution to the Topical Issue “Excitonic Processes in Condensed Matter, Nanostructured and Molecular Materials” *Eur. Phys. J. B*, **86**, 66 (2013)
- (21) S. Lindner, B. Mahns, A. König, [F. Roth](#), M. Knupfer, R. Friedrich, T. Hahn & J. Kortus “Phthalocyanine dimers in a blend: spectroscopic and theoretical studies of $\text{MnPc}^{\delta+}/\text{F16CoPc}^{\delta-}$ ” *J. Chem. Phys.*, **138**, 024707 (2013)

2012

- (20) [F. Roth](#), B. Mahns, R. Schönfelder, S. Hampel, M. Nohr, B. Büchner & M. Knupfer “Comprehensive studies of the electronic structure of pristine and potassium doped chrysene investigated by electron energy-loss spectroscopy” *J. Chem. Phys.*, **137**, 114508 (2012)
- (19) B. Mahns, [F. Roth](#), A. König, M. Grobosch, M. Knupfer & T. Hahn “Electronic properties of 1,2;8,9-dibenzopentacene thin films: a joint experimental and theoretical study” *Phys. Rev. B*, **85**, 035209 (2012)
- (18) [F. Roth](#), A. König, B. Mahns, B. Büchner & M. Knupfer “Evidence for phase formation in potassium intercalated 1,2;8,9-dibenzopentacene” *Eur. Phys. J. B*, **85**, 242 (2012)
- (17) [F. Roth](#), R. Schuster, A. König, M. Knupfer & H. Berger “Momentum dependence of excitons in pentacene” *J. Chem. Phys.*, **136**, 204708 (2012)
- (16) B. Mahns, [F. Roth](#) & M. Knupfer “Absence of photoemission from the Fermi level in potassium intercalated picene and coronene films: structure, polaron or correlation physics?” *J. Chem. Phys.*, **136**, 134503 (2012)
- (15) B. Mahns, [F. Roth](#), M. Grobosch, S. Lindner, M. Knupfer, T. Saragi, T. Reichert, J. Salbeck, & T. Hahn “Electronic properties of spiro compounds for organic electronics” *J. Chem. Phys.*, **136**, 124702 (2012)
- (14) C. Kramberger, [F. Roth](#), R. Schuster, R. Kraus, M. Knupfer, E. Einarsson, S. Maruyama, D. J. Mowbray, A. Rubio, & T. Pichler “Channeling of charge carrier plasmons in carbon nanotubes” *Phys. Rev. B*, **85**, 085424 (2012)
- (13) R. Friedrich, T. Hahn, J. Kortus, M. Fronk, F. Haidu, G. Salvan, D.R.T. Zahn, M. Schlesinger, M. Mehring, [F. Roth](#), B. Mahns, & M. Knupfer “Electronic states and the influence of oxygen addition on the optical absorption behaviour of manganese phthalocyanine” *J. Chem. Phys.*, **136**, 064704 (2012)
- (12) [F. Roth](#), J. Bauer, B. Mahns, B. Büchner & M. Knupfer “Electronic structure of undoped and potassium doped coronene investigated by electron energy-loss spectroscopy” *Phys. Rev. B*, **85**, 014513 (2012)

2011

- (11) P. Cudazzo, M. Gatti, [F. Roth](#), B. Mahns, M. Knupfer & A. Rubio “Plasmon dispersion in molecular solids: Picene and potassium-doped picene” *Phys. Rev. B*, **84**, 155118 (2011)
- (10) B. Mahns, [F. Roth](#), M. Grobosch, D.R.T. Zahn & M. Knupfer “Electronic excitations of potassium intercalated manganese phthalocyanine investigated by electron energy-loss spectroscopy” *J. Chem. Phys.*, **134**, 194504 (2011)
- (9) [F. Roth](#), B. Mahns, B. Büchner & M. Knupfer “Exciton character in picene molecular solids” *Phys. Rev. B*, **83**, 165436 (2011)
- (8) [F. Roth](#), B. Mahns, B. Büchner & M. Knupfer “Dynamic response and electronic structure of potassium-doped picene investigated by electron energy-loss spectroscopy” *Phys. Rev. B*, **83**, 144501 (2011)

2010

- (7) F. Roth, C. Hess, B. Büchner, U. Ammerahl, A. Revcolevschi & M. Knupfer "Plasmons and interband transitions of $\text{Ca}_{11}\text{Sr}_3\text{Cu}_{24}\text{O}_{41}$ investigated by electron energy-loss spectroscopy" *Phys. Rev. B*, **82**, 245110 (2010)
- (6) S.-L. Drechsler, F. Roth, M. Grobosch, R. Schuster, K. Koepnik, H. Rosner, G. Behr, M. Rotter, D. Johrendt, B. Büchner & M. Knupfer "Insight into the physics of Fe-pnictides from optical and $T = 0$ penetration depth data" *Physica C: Superconductivity*, **470**, S332 (2010)
- (5) F. Roth, M. Gatti, P. Cudazzo, M. Grobosch, B. Mahns, B. Büchner, A. Rubio & M. Knupfer "Electronic properties of molecular solids: the peculiar case of solid picene" *New J. Phys.*, **12**, 103036 (2010)
- (4) F. Roth, A. König, R. Kraus, M. Grobosch, T. Kroll & M. Knupfer "Probing the molecular orbitals of FePc near the chemical potential using electron energy-loss spectroscopy" *Eur. Phys. J. B*, **74**, 339 (2010)

2009

- (3) A. König, F. Roth, R. Kraus & M. Knupfer "Electronic properties of potassium doped FePc from electron energy-loss spectroscopy" *J. Chem. Phys.*, **130**, 214503 (2009)
- (2) T. Kroll, F. Roth, A. Koitzsch, R. Kraus, D.R. Batchelor, J. Werner, G. Behr, B. Büchner & M. Knupfer "Absorption and photoemission spectroscopy of rare-earth oxypnictides" *New J. Phys.*, **11**, 025019 (2009)

2008

- (1) F. Roth, A. König, R. Kraus & M. Knupfer "Potassium induced phase transition of FePc thin films" *J. Chem. Phys.*, **128**, 194711 (2008)