

Literaturverzeichnis

- [Abou05] Abou-Ras, D., Kistorz, G., Bremaud, D., Kälin, M., Kurdeau, F. V., Tiwari, A. N. und Döbeli, M.: "Formation and characterisation of MoSe₂ for Cu(In,Ga)Se₂ based solar cells", Thin Solid Films, 480-481 (2005) 433-438
- [Abra73] Abrahams, S. C. und Bernstein, J. L.: "Piezoelectric nonlinear optic CuGaS₂ and CuInS₂ crystal structure: sublattice distortion in A^{III}B^{VI}C₂^{VI} and A^{III}B^{IV}C₂^V type chalcopyrites", The Journal of Chemical Physics, 59 (1973) 10
- [Abra74] Abrahams, S. C. und Bernstein, J. L.: "Piezoelectric nonlinear optic CuGaSe₂ and CdGeAs₂: Crystal structure, chalcopyrite microhardness, and sublattice distortion", The Journal of Chemical Physics, 61 (3) (1974) 1140
- [AbuS05] AbuShama, J., Noufi, R., Johnston, S., Ward, S. und Wu, X.: "Improved performance in CuInSe₂ and surface-modified CuGaSe₂ solar cells", Proceedings of the 31st IEEE Photovoltaic Specialists Conference, Florida (2005)
- [AGEE07] Bundesumweltministerium: "AGEE-Statistik 2006: Entwicklung der erneuerbaren Energien im Jahr 2006 in Deutschland", (21.02.2007) [<http://www.erneuerbare-energien.de>]
- [Allm94] Allmann, R.: "Röntgenpulverdiffraktometrie", Verlag Sven von Loga, (1994)
- [Alls07] Allsop, N.: "private Mitteilung",
- [Atwo99] Atwood, D.: "Soft X-rays and Extrem Ultraviolet Radiation: Principles and Applications", Cambridge University Press, (1999)
- [Baer03] Bär, M.: "Neuartige Cd-freie Fensterstruktur für Chalkopyrit-Dünnschichtsolarzellen", Dissertation, Technische Universität Berlin 2003
- [Bart71] Bartsch, H., Woltersdorf, J., Gerstengarbe, H.-C. und Werner, P.: "Elektronenmikroskopische Querschnittsabbildung", Akademie Verlag, (1971)
- [Berg95] Bergmaier, A., Dollinger, G. und Frey, C.: "Quantitative elastic recoil detection", Nuclear Instruments and Methods in Physics Research B, 99 (1995) 488-490
- [Bern88] Bernard, J. E. und Zunger, A.: "Ordered-vacancy-compound semiconductors: Pseudocubic CdIn₂Se₄", Physical Review B, 37 (12) (1988) 6835-6856
- [Bess] BESSY [<http://www.bessy.de>]
- [Beth87] Bethge, H. und Heydenreich, J.: "Elektronenmikroskopie in der Festkörperphysik", VEB Deutscher Verlag der Wissenschaften, (1982)
- [Blok57] Blokhin, M. A.: "Physik der Röntgenstrahlen", Verlag Technik, (1957)
- [Bohn98] Bohne, W., Röhrich, J. und Röscher, G.: "The New Time-of-Flight ERDA Setup at the HMI-Berlin", Nuclear Instruments and Methods B, 139 (1998) 219
- [Bohn98a] Bohne, W., Röhrich, J. und Röscher, G.: "The Berlin Time-of-Flight ERDA Setup", Nuclear Instruments and Methods B, 136-138 (1998) 633
- [Borc97] Borhardt-Ott, W.: "Kristallographie", Springer, (1997)
- [Brag13] Bragg, W. H.: "The reflection of X-rays by crystals", Proceedings of Cambridge Phil. Soc., 17 (1913) 43-57
- [Call92] Callcott, T. A.: "in: Soft X-ray Fluorescence Spectroscopy", Academic Press, (1998)
- [Chan03] Chang, C.-H., Wei, S.-H., Johnson, J. W., Zeng, S. B., Leyarowska, N., Bunker, G. und Anderson, T. J.: "Local structure of CuIn₃Se₅: X-ray absorption fine structure study and first-principle calculations", Physical Review B, 68 (2003) 541081-541089

- [Chan96] Chang, C. H., Davydov, A., Stanbery, B. J. und Anderson, T. J.: "in: *The Conference Record of the 25th IEEE Photovoltaic Specialists Conference*", Institute of Electrical and Electronic Engineers, New York (1996), 849
- [Chat06] Chatterji, T.: "Neutron Scattering from Magnetic Materials", Elsevier, (2006)
- [CXRO] X-Ray CXRO Attenuation Length http://www.cxro.lbl.gov/optical_constants/atten2.html
- [Ditt89] Dittrich, H.: "Herstellung und Charakterisierung von selenisierten Chalkopyrit-Dünnschichten für photovoltaische Anwendungen", Dissertation, Universität Konstanz 1989
- [Djes93] Djessas, K. und Masse, G.: "Characterization of Cu(Ga,In)Se₂ thin films and heterojunctions grown by close-spaced vapour transport", *Thin Solid Films*, 232 (1993) 194-200
- [Doka06] Doka, S.: "Characterization of as-grown and Ge-ion implanted CuGaSe₂ thin films prepared by the CCSVT technique", Dissertation, Freie Universität Berlin 2006
- [Dura03] Durán, L., Guerrero, C., Hernández, E., Delgado, J. M., Contreras, J., Wasim, S. M. und Rincón, C. A. D.: "Structural, optical and electrical properties of CuIn₅Se₈ and CuGa₅Se₈", *Journal of Physics and Chemistry of Solids*, 64 (2003) 1907-1910
- [Edin75] Edington, J. W.: "Electron Diffraction in the Electron Microscope Part 2 of 3", Mac Millan Press, (1975)
- [ESRF] ESRF <http://www.esrf.fr>
- [FAZo07] EU-Gipfel einigt sich: Merkel: "Eine neue Dimension des Klimaschutzes" <http://www.faz.net> 09.03.2007
- [Fear86] Fearheiley, M. L.: *Solar Cells*, 16 (1986) 91
- [Fiec00] Fiechter, S., Tomm, Y., Diesner, K. und Weiss, T.: "Homogeneity Ranges, Defect Phases and Defect Formation Energies in A^{III}B^{VI}C^{VI2} Chalcopyrites (A = Cu; B = Ga, In; C = S, Se)", *Japanese Journal of Applied Physics*, 39 (Suppl. 39-1) (2000) 123-126
- [Fish78] Fishman, G. und Sermage, B.: "Structure of the d level and the p-d coupling in I-III-VI₂ chalcopyrite compounds", *Physical Review B*, 18 (12) (1978) 7099-7103
- [Flei03] Fleischer, F.: Universität Leipzig 2003
- [Fuch01] Fuchs, O.: "Resonante inelastische Röntgenstreuung am Berylliumsulfid", Diplomarbeit, Universität Würzburg 2001
- [Fuer02] Fuertes-Marrón, D., Meeder, A., Würz, R., Babu, S. M., Rusu, M., Schedel-Niedrig, T. und Lux-Steiner, M.-C.: "Improvements on CVT-based CuGaSe₂ thin-film solar cells", *Proceedings of Photovoltaics in Europe, Rom* (2002), 421-424
- [Fuer03] Fuertes-Marrón, D.: "Structural and electronic characterization of thin-film solar cells based on CVD-grown CuGaSe₂", Dissertation, Freie Universität Berlin 2003
- [Fuer04] Fuertes-Marrón, D. und Hernández-Velasco, J.: "Crystal structure and vacancies order in chalcopyrite related semiconductors CuX_nY_m (X=In,Ga; Y=Se; n=1,3,5; m=2,5,8)", *BENSC Experimental reports, (EF)* (2004)
- [Fuer05] Fuertes-Marrón, D., Meeder, A., Sadewasser, S., Würz, R., Glatzel, T., Schedel-Niedrig, T. und Lux-Steiner, M.-C.: "Lift-off process and rear-side characterization of CuGaSe₂ chalcopyrite thin films and solar cells", *Japanese Journal of Applied Physics*, 97 (2005) 949151-949157
- [Fuer06] Fuertes-Marrón, D.: "Präsentation - MRS Spring Meeting Nizza", (2006)
- [Full1] FullProf software package by Thierry Roisnel & Juan Rodriguez-Carvajal <http://www.ill.fr/pages/Science/Diff/Soft/Fp/>
- [Gebh80] Gebhardt, W. und Krey, U.: "Phasenübergänge und kritische Phänomene", Friedrich Vieweg & Sohn, (1980)

- [Grim26] Grimm, H. G. und Sommerfeld, A.: "Über den Zusammenhang des Abschlusses der Elektronengruppen im Atom mit den chemischen Valenzzahlen", Zeitschrift für Physik, 36 (1926) 36-59
- [Hahn52] Hahn, H., Frank, G., Klingler, W., Meyer, A.-D. und Störger, G.: "Über einige ternäre Chalkogenide mit Chalkopyritstruktur", Zeitschrift für anorganische und allgemeine Chemie, 271 (1952) 153-170
- [Hana97] Hanada, T., Yamana, A., Nakamura, Y., Nittono, O. und Wada, T.: "Crystal Structure of CuIn_3Se_5 Semiconductor Using Electron and X-ray Diffractions", Japanese Journal of Applied Physics, 36 (Part 2, No. 11B) (1997) L1494 - L1497
- [Hart55-1] Hartmann, P. und Perdok, W. G.: "On the Relations Between Structure and Morphology of Crystals I", Acta Crystallographica, 8 (1955) 49-52
- [Hart55-2] Hartmann, P. und Perdok, W. G.: "On the Relations Between Structure and Morphology of Crystals II", Acta Crystallographica, 8 (1955) 521-524
- [Hart55-3] Hartmann, P. und Perdok, W. G.: "On the Relations Between Structure and Morphology of Crystals III", Acta Crystallographica, 8 (1955) 525-529
- [HMI] HMI http://www.hmi.de/bensc/instrumentation/instrumente/e9/e9_en.htm
- [HMI] http://www.hmi.de/bensc/instrumentation/instrumente/e9/e9_en.htm
- [Hofs06] Hofstetter, J.: "Ge und Sn in CuGaSe_2 ", Diplomarbeit, Freie Universität Berlin 2006
- [Hönl88] Hönl, W., Kühn, G. und Boehnke, U.-C.: "Crystal Structures of Two Quenched Cu-In-Se Phases", Crystal Research and Technology, 23 (10/11) (1988) 1347-1354
- [Hope60] Hopfield, J. J.: "Fine structure in the optical absorption of anisotropic crystals", Journal of Physics and Chemistry of Solids, 15 (1960) 97-107
- [Horn95] Hornung, M., Benz, K. W., Margulis, L., Schmid, D. und Schock, H. W.: "Growth of bulk $\text{Cu}_{0.85}\text{In}_{1.05}\text{Se}_2$ and characterization on a micro scale", Journal of Crystal Growth, 154 (1995) 315-321
- [ICSD] Inorganic Crystal Structure Database <http://www.fiz-karlsruhe.de/ecid/Internet/de/DB/icsd/index.html>
- [ITCA] "International Tables for Crystallography: Volume A", Kluwer Academic Publishers, (1999)
- [ITCC] "International Tables For Crystallography: Volume C", Kluwer Academic Publishers, (1999)
- [Jaff03] Jaffee, J. E. und Zunger, A.: "Defect-induced nonpolar-to-polar transition at the surface of CuInSe_2 ", Journal of Physics and Chemistry of Solids, 64 (2003) 1547-1552
- [Jaff83] Jaffee, J. E. und Zunger, A.: "Electronic structure of the ternary chalcopyrite semiconductors CuAlS_2 , CuGaS_2 , CuInS_2 , CuGaSe_2 and CuInSe_2 ", Physical Review B, 28 (10) (1983) 5822-5847
- [Jaff83a] Jaffee, J. E. und Zunger, A.: "Anion displacements and the band-gap anomaly in ternary ABC_2 chalcopyrite semiconductors", Physical Review B, 27 (8) (1983) 5176-5179
- [Jaff84] Jaffee, J. E. und Zunger, A.: "Theory of the band-gap anomaly in ABC_2 chalcopyrite semiconductors", Physical Review B, 29 (4) (1984) 1882-1906
- [JCPDS] Joint Committee on Powder Diffraction Standards
- [Jitsu98] Jitsukawa, H.: "Phase diagrams of the $(\text{Cu}_2\text{Se}, \text{CuSe})\text{-CuGaSe}_2$ system and the crystal growth of CuGaSe_2 by the solution method", Journal of Crystal Growth, 186 (1998) 587-593
- [Joy 86] Joy, D. C., Jr., A. D. R. und Goldstein, J. I.: "Principle of Analytical Electron Microscopy", Plenum Press New York and London, (1986)
- [Kern92] Kern, A.: "Präzisionspulverdiffraktometrie: Ein Vergleich verschiedener Methoden", Diplomarbeit, Universität Heidelberg 1992

- [Kleb56] Kleber, W.: *"Einführung in die Kristallographie"*, VEB Verlag Technik Berlin, (1956)
- [Klei99] Klein, A. und Jaegermann, W.: *"Fermi-level-dependent defect formation in Cu-chalcopyrite semiconductors"*, Applied Physics Letters, 74 (16) (1999) 2283-2285
- [Klen93] Klenk, R.: *"Polykristalline CuGaSe₂ - Dünnschichten für die Photovoltaik Herstellung und Charakterisierung von Absorbern und Heteroübergängen"*, Universität Stuttgart 1993
- [Klen93a] Klenk, R., Walter, T., Schock, H. W. und Cahen, D.: *"A model for successful growth of polycrystalline CuInSe₂ by multisource physical evaporation"*, Advanced Materials, 5 (2) (1993) 114-119
- [Köts03] Kötschau, I. M.: *"Strukturelle Eigenschaften von Cu(In,Ga)(S,Se)₂ Dünnschichten"*, Dissertation, Universität Stuttgart 2003
- [Krej99] Krejci, M.: *"Preparation and Characterization of Heteroepitaxial CuIn_xSe_y Layers and Cu(In,Ga)Se₂ Substrate Solar Cells"*, Dissertation, Eidgenössische Technische Hochschule Zürich 1999
- [Laue13] von_Laue, M. und Tank, F.: *"Die Gestalt der Interferenzpunkte bei den Röntgenstrahlaufnahmen an regulären Kristallen"*, Annalen der Physik, (42) (1913) 397
- [Lehm03] Lehmann, S.: *"Pulsed Laser Deposition von (2ZnSe)_x(CuInSe₂)_{1-x} - Schichten auf (001) GaAs und Glas"*, Universität Leipzig 2003
- [Lehm06] Lehmann, S., Bär, M., Fuertes-Marrón, D., Pistor, P., Wiesner, S., Rusu, M., Kötschau, I., Laueremann, I., Grimm, A., Sokoll, S., Fischer, C.-H., Th.Schedel-Niedrig, Lux-Steiner, M.-C. und Jung, C.: *"CuGaSe₂-CuGa₃Se₅ phase transition in CCSVT-grown thin films"*, Thin Solid Films, 511-512 (2006) 623-627
- [Lei06] Lei, C. H., Rockett, A. A., Robertson, I. M., Papatthanasious, N. und Siebentritt, S.: *"Interface reactions and Kirkendall voids in metal organic vapor-phase epitaxy grown Cu(In,Ga)Se₂ thin films on GaAs"*, Japanese Journal of Applied Physics, 100 (2006) 114915-1-8
- [Levc06] Levchenko, S., Syrbu, N. N., Nateprov, A., Arushanov, E., Merino, J. M. und León, M.: *"Optical properties of CuGa₃Se₅ single crystals"*, Journal of Physics D: Applied Physics, 39 (2006) 1515-1520
- [Liao02] Liao, D. und Rockett, A.: *"Epitaxial growth of Cu(In,Ga)Se₂ on GaAs(110)"*, Japanese Journal of Applied Physics, 91 (4) (2002) 1978-1983
- [Lind03] Lindner, S.: *"ERDA - Untersuchungen atomarer Diffusionsprozesse in Chalkopyrit-Dünnschichtsolarzellen"*, Dissertation, Freie Universität Berlin 2003
- [Lott88] Lottici, P. P., Antonioli, G. und Razzetti, C.: *"Effective bond-stretching force constants in chalcopyrite CuGaSe₂ by temperature dependence of extended x-ray-absorption fine-structure spectra"*, Physical Review B, 37 (15) (1988) 9017-9021
- [Lux00] Lux-Steiner, M. C., Ennaoui, A., Fischer, C.-H., Jäger-Waldau, A., Klaer, J., Klenk, R., Könenkamp, R., Matthes, T., Scheer, R., Siebentritt, S. und Weidinger, A.: *"Processes for chalcopyrite-based solar cells"*, Thin Solid Films, 361-362 (2000) 533-539
- [Mand77] Mandel, L.: *"Crystal data for CuGaSe₂"*, Journal of Applied Crystallography, 10 (1977) 130-131
- [Mano79] Manolikas, C., Landuyt, J. v., Ridder, R. d. und Amelinckx, S.: *"Electron Microscopic Study of the Domain Structure and of the Transition State in Cu_{0.5}In_{2.5}Se₄"*, Physica Status Solidi (a), 55 (1979) 709-722
- [Mari04] Marín, G., Wasim, S. M., Rincón, C., Pérez, G. S., Bocaranda, P., Molina, I., Guevara, R. und Delgado, J. M.: *"Crystal growth, structural and optical characterization of the ordered defect compound CuGa₅Se₈"*, Journal of Applied Physics, 95 (12) (2004) 8280-8285
- [Mari98] Marín, G., Tauleigne, S., Wasim, S. M., Guevara, R., Delgado, J. M., Rincón, C., Mora, A. E. und Pérez, G. S.: *"X-ray powder diffraction and optical characterization of the Cu(In_{1-x}Ga_x)₃Se₅ semiconducting system"*, Materials Research Bulletin, 33 (7) (1998) 1057-1068

- [Mass93] Masse, G. und Djessas, K.: "Close-spaced vapour transport of CuInSe_2 , CuGaSe_2 and $\text{Cu}(\text{Ga,In})\text{Se}_2$ ", Thin Solid Films, 226 (1993) 254-285
- [Mass97] Masse, G., Guenoun, K., Djessas, K. und Guastavino, F.: "p- and n-type CuInSe_2 thin films grown by close-spaced vapour transport", Thin Solid Films, 293 (1997) 45-51
- [Meed03] Meeder, A., Weinhardt, L., Stresing, R., Fuertes-Marrón, D., Würz, R., Babu, S. M., Schedel-Niedrig, T., Lux-Steiner, M. C., Heske, C. und Umbach, E.: "Surface and bulk properties of CuGaSe_2 thin films", Journal of Physics and Chemistry of Solids, 64 (2003) 1553-1557
- [Meed03] Meeder, A.: "Defektspektroskopie an CuGaSe_2 aus der halogenunterstützten Gasphasenabscheidung", Dissertation, Freie Universität Berlin 2003
- [Meis89] Meisel, A., Leonhardt, G. und Szargan, R.: "X-Ray Spectra and Chemical Binding", Springer, (1989)
- [Meri00] Merino, L. M., Mahanty, S., León, M., diaz, R., Rueda, F. und Vidales, J. L. M. d.: "Structural characterization of $\text{CuIn}_2\text{Se}_{3.5}$, CuIn_3Se_5 and CuIn_5Se_8 compounds", Thin Solid Films, 361-362 (2000) 70-73
- [Meri00a] Merino, J. M., Díaz, R. und León, M.: "Bond ionicities in CuBC_2 chalcogenides (B=Al, Ga, In; C=S, Se, Te)", Physical Review B, 61 (15) (2000) 10211-10215
- [Meri03] Merino, J. M., Michiel, M. D. und León, M.: "Structural analysis of CuInSe_2 and CuIn_3Se_5 at different temperatures with synchrotron radiation", Journal of Physics and Chemistry of Solids, 64 (2003) 1649-1652
- [Meye00] Meyer, N.: "Phasenbildung im Raum Cu-Ga-Se und halogenunterstützte Gasphasenabscheidung von CuGaSe_2 -Absorberschichten für Solarzellen", Dissertation, Freie Universität Berlin 2000
- [Mikk81] Mikkelsen, J. C.: "Ternary Phase Relations Of The Chalcopyrite Compound CuGaSe_2 ", Journal of Electronic Materials, 10 (3) (1981) 541-558
- [Nega95] Negami, T., Kohara, N., Nishitani, M., Wada, T. und Hirao, T.: "Preparation and characterization of $\text{Cu}(\text{In}_{1-x}\text{Ga}_x)_3\text{Se}_5$ thin films", Applied Physics Letters, 67 (6) (1995) 825-827
- [Neum83] Neumann, H.: "Vacancy Formation Enthalpies in A^{III}B^{III}C^{VI2} Chalcopyrite Semiconductors", Crystal Research and Technology, 18 (1983) 901
- [Neut92] Neutron News, 3 (3) (1992) 29-37
- [Nish03] Nishiwaki, S., Siebentritt, S. und Lux-Steiner, M. C.: "Preparation and Characterization of Cu-Ga-Se Films of Ordered Vacancy Compound", Materials Research Society Symposium Proceedings, 763 (B5.18) (2003) 219-224
- [Nish98] Nishiwaki, S., Kohara, N., Negami, T. und Wada, T.: "MoSe₂ layer formation at $\text{Cu}(\text{In,Ga})\text{Se}_2/\text{Mo}$ Interfaces in High Efficiency $\text{Cu}(\text{In}_{1-x}\text{Ga}_x)\text{Se}_2$ Solar Cells", Japanese Journal of Applied Physics, 37 (Part 2, No 1A/B) (1998) L 71 - L 73
- [NIST1] NIST X-Ray Transitions <http://physics.nist.gov/cgi-bin/XrayTrans/>
- [NIST2] NIST mass absorption coefficients <http://physics.nist.gov/PhysRefData/XrayMassCoef/chap2.html>
- [NIST3] NIST XPS Database <http://www.nist.gov/srd/nist20.html>
- [NIST3] LaB₆ reference data sheet <http://ts.nist.gov/MeasurementServices/ReferenceMaterials/>
- [NIST4] Neutron scattering length <http://www.ncnr.nist.gov/resources/n-lengths/> (Data from V.F. Sears, Neutron News, Vol. 3, No. 3 (1992) 29-37)
- [Orlo03] Orlova, N. S., Bodnar, I. V. und Kushner, T. L.: "Structural and physico-chemical properties of the CuGa_5Se_8 , CuGa_3Se_5 and CuIn_3Se_5 compounds", Journal of Physics and Chemistry of Solids, 64 (2003) 1895-1899
- [Oura03] Oura, K., Lifshits, V. G., Saranin, A. A., Zotov, A. V. und Ktayama, M.: "Surface Science", Springer, (2003)

- [Pala66] Palatnik, L. S., Belova, E. K., Atroshchenko, L. V. und Komnik, Y. F.: "*Study of the semiconducting alloys CuGaSe₂ - Ga₂Se₃*", Soviet Physics-Crystallography, 10 (4) (1966) 395-400
- [Pala67] Palatnik, L. S. und Belova, E. K.: "*Study of the Semiconducting Systems of the Type A₂C^{VI} - B₂^{III}C^{VI} (translated)*", Inorganic Materials (translated), (12) (1967) 2194-2202
- [Pas04] Paszkowicz, W., Lewandowska, R. und Bacewicz, R.: "*Rietveld refinement for CuInSe₂ and CuIn₃Se₅*", Journal of Alloys and Compounds, 362 (2004) 241-247
- [Pat] "HMI/Aixtron deutsches Patent "DE 102 08 911.6""
- [Pers05] Persson, C., Zhao, Y.-J., Lany, S. und Zunger, A.: "*n-type doping of CuInSe₂ and CuGaSe₂*", Physical Review B, 72 (35211-1_35211-14) (2005)
- [Pist05] Pistor, P.: "Quantitative Analysis of Soft-X-Ray Emission Spectra Applied to Chalcopyrite Solar Cell Material", Diplomarbeit, Freie Universität Berlin 2004
- [Rega04] Rega, N.: "Photolumineszenz von epitaktischen Cu(In,Ga)Se₂ - Schichten", Freie Universität Berlin 2004
- [Rena98] Renaud, G.: "Oxide surfaces and metal/oxide interfaces studied by grazing incidence X-ray scattering", Surface Science Reports, 32 (1998) 1
- [Riet67] Rietveld, H. M.: "*Seminar paper no. 1*", Acta Crystallographica, 22 (1967) 151-2
- [Riet69] Rietveld, H. M.: "*A Profile Refinement Method for Nuclear and Magnetic Structures*", Journal of Applied Crystallography, 2 (1969) 65-71
- [Rinc03] Rincón, C., Wasim, S. M., Marín, G., Delgado, J. M. und Contreras, J.: "*Effect of ordered arrays of native defects on the crystal structure of In- and Ga-rich Cu-ternaries*", Applied Physics Letters, 83 (7) (2003) 1328-1330
- [Rinc92] Rincón, C.: "Order-disorder transition in ternary chalcopyrite compounds and pseudobinary alloys", Physical Review B, 45 (22) (1992) 12716-12719
- [Rinc98] Rincón, C., Wasim, S. M., Marín, G., Delgado, J. M., Huntzinger, J. R., Zwick, A. und Galibert, J.: "*Raman spectra of the ordered vacancy compounds CuIn₃Se₅ and CuGa₃Se₅*", Applied Physics Letters, 73 (4) (1998) 441-443
- [Rowe71] Rowe, J. E. und Shay, J. L.: "*Extension of the Quasicubic Model to Ternary Chalcopyrite Crystals*", Physical Review B, 3 (2) (1971) 451-453
- [Rusu03] Rusu, M., Wiesner, S., Lindner, S., Strub, E., Röhrich, J., Würz, R., Fritsch, W., Bohne, W., Schedel-Niedrig, T., Lux-Steiner, M. C., Giesen, C. und Heuken, M.: "*Deposition and characterization of Ga₂Se₃ thin films prepared by a novel chemical close-spaced vapour transport technique*", Journal of Physics: Condensed Mater, 15 (2003) 8185-8193
- [Rusu04] Rusu, M., Wiesner, S., Fuertes-Marrón, D., Meeder, A., Doka, S., Bohne, W., Lindner, S., Schedel-Niedrig, T., Giesen, C., Heuken, M. und Lux-Steiner, M. C.: "*CuGaSe₂ thin films prepared by a novel CCSVT technique for photovoltaic application*", Thin Solid Films, 451-452 (2004) 556-561
- [Rusu05] Rusu, M.: "*interne Mitteilung*"
- [Saad96] Saad, M., Riaz, H., Bucher, E. und Lux-Steiner, M.-C.: Applied Physics A, 62 (1996) 181
- [Schm92] Schmid, D., Ruckh, M., Grunwald, F. und Schock, H. W.: "*Chalcopyrite/defect chalcopyrite heterojunctions on the basis of CuInSe₂*", Journal of Applied Physics, 73 (6) (1992) 2902-2909
- [Schm96] Schmid, D., Ruckh, M. und Schock, H. W.: "*Photoemission studies on Cu(In,Ga)Se₂ thin films and related binary selenides*", Applied Surface Science, 103 (1996) 409-429
- [Scho06] Schorr, S.: "Phasenbeziehungen und Metallordnung multinärer Halbleiternischkristalle und Zinkblendederivaten", Habilitationsschrift, Universität Leipzig 2006

- [Scho06a] Schorr, S. und Geandier, G.: "In-situ investigation of the temperature dependent structural phase transition in CuInSe_2 by synchrotron radiation", *Crystal Research and Technology*, 41 (5) (2006) 450-457
- [Schö99] Schön, J. H., Oestreich, J., Schenker, O., Riazhi-Nejad, H., Klenk, M., Fabre, N., Arushanov, E. und Bucher, E.: "*n-type conduction in Ge-doped CuGaSe_2* ", *Applied Physics Letters*, 75 (19) (1999) 2969-2971
- [Schr90] Schroder, D. K.: "Semiconductor Material and Device Characterization", Wiley, (1990)
- [Schu] Schuster, M., Göbel, H. und Burgäzy, F.: "*Göbel-Mirrors - a Breakthrough for Applications of X-Ray Diffraction*", Bruker Report, 9-13
- [Schu04] Schuler, S., Siebentritt, S., Nishiwaki, S., Rega, N., Beckmann, J., Brehme, S. und Lux-Steiner, M.-C.: "*Self-compensation of intrinsic defects in the ternary semiconductor CuGaSe_2* ", *Physical Review B*, 69 (2004) 452101-452109
- [Segm89] Segmüller, A., Noyan, I. und Speriosu, V. S.: "*X-Ray Diffraction Studies of Thin Films and Multilayer Structures*", *Progress in Crystal Growth and Characterisation*, 18 (1989) 21
- [Shan67] Shannon, R. D.: "*in: Structure and Bonding in Crystals*", 2((1967) 246
- [Shay72] Shay, J. L., Tell, B., Kasper, H. M. und Schiavone, L. M.: "*p-d Hybridisation of the Valence Bands of I-III-V₂ Compounds*", *Physical Review B*, 5 (12) (1972) 5003-5005
- [Shay75] Shay, J. L. und Wernick, J. H.: "Ternary Chalcopyrite Semiconductors: Growth, Electronic Properties, and Applications", Pergamon Press, (1975)
- [Siem01] Siemer, K., Klaer, J., Luck, I., Bruns, J., Klenk, R. und Bräunig, D.: "*Efficient CuInS_2 solar cells from a rapid thermal process (RTP)*", *Solar Energie Materials and Solar Cells*, 67 (2001) 159-166
- [Stan02] Stanbery, B. J., Kincaid, S., Kim, S., Chang, C. H., Ahrenkiel, S. P., Lippold, G., Neumann, H., Anderson, T. J. und Crisalle, O. D.: "*Epitaxial growth and characterization of CuInSe_2 crystallographic polytypes*", *Journal of Applied Physics*, 91 (6) (2002) 3598-3604
- [Su99] Su, D. S. und Wei, S. H.: "Transmission electron microscopy investigation and first-principles calculation of the phase stability in epitaxial CuInS_2 and CuGaSe_2 films", *Applied Physical Letters*, 74 (17) (1999) 2483-2485
- [Tell75] Tell, B. und Bridenbaugh, P. M.: "*Aspects of the band structure of CuGaS_2 and CuGaSe_2* ", *Physical Review B*, 12 (8) (1975) 3330-3335
- [Tesm95] Tesmer, J., Nastasi, M., Barbour, J., Maggiore, C. und Mayer, J.: "*Handbook of Modern Ion Beam Materials Analysis*", Materials Research Society, Pittsburgh, USA, (1995)
- [Tham98] Anh, T. T.: "Untersuchung von nichtstöchiometrischen Verbindungen im System Cu-In-Se", Diplomarbeit, Humboldt-Universität zu Berlin 1998
- [Több01] Többens, D. M., Stüßer, N., Knorr, K., Mayer, H. M. und Lampert, H.: "*E9: The New High-Resolution Neutron Powder Diffractometer at the Berlin Neutron Scattering Center*", *Material Science Forum*, 378-381 (2001) 288-293
- [Tsen89] Tseng, B. H. und Wert, C. A.: "*Defect-ordered phases in a multiphase Cu-In-Se material*", *Japanese Journal of Applied Physics*, 65 (6) (1989) 2254-2257
- [Vaug78] Vaughan, D. J. und Craig, J. R.: "*Mineral chemistry of metal sulfides*", (1978)
- [Vaug78] Vaughn, D. J. und Craig, J. R.: "*Mineral chemistry of metal sulfides*", Cambridge University Press, (1978)
- [Walu88] Walukiewicz, W.: "Fermi level dependent native defect formation: Consequences for metal-semiconductor and semiconductor-semiconductor interfaces", *Journal of Vacuum Science and Technology*, 6 (4) (1988) 1257-1262
- [Wata93] Turtle, D. T. J.: "H. Watanabe: "Halogen Transport Epitaxy" in Handbook of Crystal Growth Vol.3", Elsevier Science, (1994)
- [WebE] WebEmaps <http://emaps.mrl.uiuc.edu/emaps.apc>

- [Wei88] Wei, S. H. und Zunger, A.: "*Role of metal d states in II-VI semiconductors*", Physical Review B, 37 (1988) 8958-8981
- [Wei98] Wei, S.-H., Zhang, S. B. und Zunger, A.: "*Effects of Ga addition to CuInSe₂ on its electronic, structural, and defect properties*", Applied Physical Letters, 72 (24) (1998) 3199-3201
- [Wein05] Weinhardt, L.: "Elektronische und chemische Eigenschaften von Grenzflächen und Oberflächen in optimierten Cu(In,Ga)(S,Se)₂ Dünnschichtsolarzellen", Dissertation, Julius-Maximilian-Universität Würzburg 2005
- [Yang06] Yang, L. C.: "Sputtered epitaxial chalcopyrite CuInSe₂ films grown on GaAs substrates", Journal of Crystal Growth, 294 (2006) 202-208
- [Yood84] Yooder, K. und Woolley, J. C.: "Effects of p-d hybridisation of the valence band of I-III-VI₂ chalcopyrite semiconductors", Physical Review B, 30 (10) (1984) 5904-5915
- [Youn95] Young, R. A.: "*The Rietveld Method*", Oxford University Press, (1995)
- [Zhan97] Zhang, S. B., Wei, S.-H. und Zunger, A.: "*Stabilization of Ternary Compounds via Ordered Arrays of Defect Pairs*", Physical Review Letters, 78 (21) (1997) 4059-4062
- [Zhan98] Zhang, S. B., Wei, S.-H., Zunger, A. und Katayama-Yoshida, H.: "*Defect physics of the CuInSe₂ chalcopyrite semiconductor*", Physical Review B, 57 (16) (1998) 9642-9656
- [Zhao04] Zhao, Y.-J., Persson, C., Lany, S. und Zunger, A.: "*Why can CuInSe₂ be readily equilibrium-doped n-type but the wider-gap CuGaSe₂ cannot?*" Applied Physics Letters, 85 (24) (2004) 5860-5862