

Publikationsliste von PD Dr. Torsten E.M. Staab

Artikel in referierten Zeitschriften und Konferenzproceedings

- [1] S. Artz, T.H. Hansson, A. Karlhede, and T. Staab. Regularized anyons. *Phys. Lett.*, B267:389–394, 1991.
- [2] T. Staab, Ch. Hübner, R. Krause-Rehberg, H.S. Leipner, W. Zeiger, and B. Vetter. Sintering of copper, nickel, and tungsten studied by positron lifetime spectroscopy. *Mater. Sci. Forum*, 175-178:541–544, 1995.
- [3] Ch. Hübner, T. Staab, and R. Krause-Rehberg. Positron diffusion in fine-grained materials – A Monte-Carlo simulation. *Appl. Phys.*, A61:203–206, 1995.
- [4] C.G. Hübner, T. Staab, and H.S. Leipner. TEM-Studies of the microstructure of pressureless sintered copper. *phys. stat. sol. (a)*, 150:653–660, 1995.
- [5] B. Somieski, T.E.M. Staab, and R. Krause-Rehberg. The data treatment influence on the spectra decomposition in positron lifetime spectroscopy; Part 1: On the interpretation of multi-component analysis studied by Monte-Carlo simulated model spectra. *Nucl. Instr. and Meth.*, A381:128–140, 1996.
- [6] T.E.M. Staab, B. Somieski, and R. Krause-Rehberg. The data treatment influence on the spectra decomposition in positron lifetime spectroscopy; Part 2: The effect of source corrections. *Nucl. Instr. and Meth.*, A381:141–151, 1996.
- [7] T.E.M. Staab and R. Krause-Rehberg. Positron annihilation in fine powders and fine-grained materials. *Mater. Sci. Forum*, 255-257:479–481, 1997.
- [8] A. Polity, R. Krause-Rehberg, T.E.M. Staab, M.J. Puska, J. Klais, H.J. Möller, and B.K. Meyer. Study of defects in electron irradiated CuInSe₂ by positron lifetime spectroscopy. *J. Appl. Phys.*, 83(1):71–78, 1998.
- [9] T.E.M. Staab, R. Krause-Rehberg, B. Vetter, and B. Kieback. The influence of microstructure on the sintering process in crystalline metal powders investigated by positron lifetime spectroscopy: Part I: Electrolytic and spherical copper powder. *J. Phys.: Condens. Matter*, 11(7):1757–1786, 1999.
- [10] T.E.M. Staab, R. Krause-Rehberg, B. Vetter, B. Kieback, G. Lange, and P. Klimanek. The influence of microstructure on the sintering process in crystalline metal powders investigated by positron lifetime spectroscopy: Part II: Tungsten powder of different powder particle sizes. *J. Phys.: Condens. Matter*, 11(7):1787–1806, 1999.
- [11] T.E.M. Staab, R. Krause-Rehberg, B. Vetter, and B. Kieback. The influence of microstructure on the sintering process in crystalline metal powders investigated by positron lifetime spectroscopy: Part III: Nickel reduction powder. *J. Phys.: Condens. Matter*, 11(7):1807–1822, 1999.
- [12] T.E.M. Staab, R. Krause-Rehberg, and B. Kieback. Positron annihilation in fine-grained materials and fine powders — an application to sintering of technically used metal powders. *J. Mater. Sci.*, 34:3833–3851, 1999.
- [13] T.E.M. Staab, M. Haugk, Th. Frauenheim, and H.S. Leipner. Magic number vacancy clusters in GaAs — structure and positron lifetime studies. *Phys. Rev. Lett.*, 83(26):5519–5522, 1999.

- [14] J. Gebauer, M. Lausmann, T.E.M. Staab, R. Krause-Rehberg, M. Hakala, and M.J. Puska. Microscopic identification of native donor Ga-vacancy complexes in Te-doped GaAs. *Phys. Rev.*, B60(3):1464–1467, 1999.
- [15] H.S. Leipner, C.G. Hübner, T.E.M. Staab, M. Haugk, and R. Krause-Rehberg. Positron annihilation at dislocations and related point defects in semiconductors. *phys. stat. sol. (a)*, 171:377–382, 1999.
- [16] T.E.M. Staab, A. Sieck, M. Haugk, Th. Frauenheim, and H.S. Leipner. Magic number vacancy aggregates in GaAs and Si — structure and positron lifetime studies. *Physica*, B273–274:501–504, 1999.
- [17] M. Haugk, J. Elsner, Th. Frauenheim, T.E.M. Staab, C.D. Latham, R. Jones, H.S. Leipner, T. Heine, G. Seifert, and M. Sternberg. Structure, energetics, and electronic properties of complex III-V semiconductor systems. *phys. stat. sol. (b)*, 217:473–511, 2000.
- [18] T.E.M. Staab and B. Kieback. Positron annihilation spectroscopy — a tool for the characterization of defects in porous and fine-grained powder compacts. In B. Jouffrey and J. Svejcar, editors, *Microstructural Investigations and Analysis — EUROMAT 99 – Volume 4*, pages 23–28, Weinheim, 2000. Wiley-VCH.
- [19] T.E.M. Staab, E. Zschech, and R. Krause-Rehberg. Positron lifetime measurements for the characterization of nano-structural changes in the age hardenable AlCuMg 2024 alloy. *J. Mater. Sci.*, 35:4667–4672, 2000.
- [20] J. Gebauer, F. Börner, R. Krause-Rehberg, T.E.M. Staab, W. Bauer-Kugelmann, G. Kögel, W. Triftshäuser, P. Specht, R. Lutz, E.R. Weber, and M. Luysberg. Defect identification in GaAs grown at low temperatures by positron annihilation. *J. Appl. Phys.*, 87(12):8368–8379, 2000.
- [21] J. Gebauer, R. Krause-Rehberg, and T.E.M. Staab. Lifetime of positrons in the GaAs lattice. *phys. stat. sol. (a)*, 220:R1–R3, 2000.
- [22] H.S. Leipner, C.G. Hübner, T.E.M. Staab, M. Haugk, A. Sieck, R. Krause-Rehberg, and T. Frauenheim. Vacancy clusters in plastically deformed semiconductors. *J. Phys.: Condens. Matter*, 12(49):10071–10078, 2000.
- [23] T.E.M. Staab, L. Torpo, M.J. Puska, and R.M. Nieminen. Calculated positron annihilation parameters for defects in SiC. *Mater. Sci. Forum*, 353-356:533–536, 2001.
- [24] T.E.M. Staab, M.J. Puska, M. Hakala, A. Sieck, M. Haugk, Th. Frauenheim, and H.S. Leipner. Irradiation experiments revisited — stability and positron lifetime of large vacancy clusters in silicon. *Mater. Sci. Forum*, 363-365:135–137, 2001.
- [25] T.E.M. Staab, R.M. Nieminen, J. Gebauer, R. Krause-Rehberg, M. Luysberg, M. Haugk, and Th. Frauenheim. Do arsenic interstitial really exist in As-rich GaAs? *Phys. Rev. Lett.*, 87(4):045504/1–4, 2001.
- [26] J. Gebauer, R. Krause-Rehberg, C. Domke, Ph. Ebert, K. Urban, and T.E.M. Staab. Direct identification of As vacancies in GaAs using positron annihilation calibrated by scanning tunneling microscopy. *Phys. Rev.*, B63(4):045203/1–9, 2001.
- [27] J. Gebauer, T.E.M. Staab, F. Redmann, and R. Krause-Rehberg. Detailed microscopic defect identification in GaAs. *Mater. Sci. Forum*, 363-365:76–78, 2001.
- [28] H.S. Leipner, C.G. Hübner, T.E.M. Staab, and R. Krause-Rehberg. Open-volume defects in plastically deformed semiconductors. *Mater. Sci. Forum*, 363-365:61–63, 2001.

- [29] E. Rauls, T.E.M. Staab, Z. Hajnal, and Th. Frauenheim. Interstitial-based vacancy annealing in 4H-SiC. *Physica B*, 308-310:645–648, 2001.
- [30] L. Torpo, M. Marlo, T.E.M. Staab, and R.M. Nieminen. Comprehensive ab-initio study on properties of monovacancies and antisites in 4H-SiC. *J. Phys.: Condens. Mater*, 13:6203–6231, 2001.
- [31] L. Torpo, T.E.M. Staab, and R.M. Nieminen. Divacancy in 3C- and 4H-SiC: An extremely stable defect. *Phys. Rev.*, B65(8):085202/1–10, 2002.
- [32] T.E.M. Staab, A. Sieck, M. Haugk, M.J. Puska, Th. Frauenheim, and H.S. Leipner. Stability of large vacancy clusters in Silicon. *Phys. Rev.*, B65(11):115210/1–11, 2002.
- [33] K. Bennewitz, M. Haaks, T.E.M. Staab, S. Eisenberg, T. Lampe, and K. Maier. Positron annihilation spectroscopy — a non-destructive method for lifetime predictions in the field of dynamical testing. *Z. Metallkd.*, 93(8):778–783, 2002.
- [34] C. Zamponi, U. Männig, T.E.M. Staab, M. Hammer, S. Eichler, and K. Maier. Point defects as result of surface deformation on a GaAs wafer. *Appl. Phys. Lett.*, 83(20):4128–4130, 2003.
- [35] T.E.M. Staab, R.M. Nieminen, M. Luysberg, J. Gebauer, and Th. Frauenheim. Strain relaxation in LT-GaAs by the agglomeration of As antisites. *Physica B*, 340-342:293–298, 2003.
- [36] T.E.M. Staab, R. Krause-Rehberg, and B. Kieback. Defects in fine-grained and porous materials characterized by positron annihilation. In *Proceedings of the 3rd international Symposium on Material Chemistry in Nuclear Environment (Materials Chemistry MC'02)*, pages 95–101, Ibaraki-ken, Tsukuba, Japan, 2003. Japan Atomic Energy Research Institut.
- [37] C. Zamponi, St. Sonneberger, M. Haaks, I. Müller, T. Staab, K. Maier, and G. Tempus. Investigation of fatigue cracks in aluminum alloys 2024 and 6013 in laboratory air and corrosive environment. *J. Mater. Sci.*, 39(23):6951–6956, 2004.
- [38] R. Krause-Rehberg, V. Bondarenko, J. Pöpping, N.A. Stolwijk, T.E.M. Staab, and U. Södervall. Observation of vacancies during Zn diffusion in GaP. *Mater. Sci. Forum*, 445-446:26–30, 2004.
- [39] T.E.M. Staab, C. Zamponi, M. Haaks, I. Müller, K. Maier, and S. Eichler. Spatially resolved detection of point defects in the vicinity of scratches on GaAs. *Mater. Sci. Forum*, 445-446:510–512, 2004.
- [40] M. Haaks, C. Tramm, I. Müller, T.E.M. Staab, C. Zamponi, P. Herzog, and K. Maier. Positron trapping in deformed copper down to millikelvins. *Mater. Sci. Forum*, 445-446:96–98, 2004.
- [41] I. Müller, K. Bennewitz, M. Haaks, T.E.M. Staab, S. Eisenberg, T. Lampe, and K. Maier. Non-destructive lifetime prediction in material testing with the Bonn Positron Microprobe. *Mater. Sci. Forum*, 445-446:498–500, 2004.
- [42] J. Lento, L. Torpo, T.E.M. Staab, and R.M. Nieminen. Self-interstitials in 3C-SiC. *J. Phys.: Condens. Matter*, 16:1053–1060, 2004.
- [43] X.Y. Zhang, W. Sprengel, K. Blaurock, K.J. Reichle, H. Inui, T.E.M. Staab, and H.-E. Schaefer. Formation of thermal vacancies on the Si sublattice of the intermetallic compound MoSi₂. *Phys. Rev. Lett.*, 92(15):155502/1–4, 2004.

- [44] M. Haaks, T.E.M. Staab, K. Saarinen, and K. Maier. Chemical sensitivity in positron annihilation with just one single detector. *phys. stat. sol. (a)*, 202(4):R38–R40, 2005.
- [45] T.E.M. Staab, M. Luysberg, Th. Frauenheim, and R.M. Nieminen. Agglomeration of As antisites in As-rich LT-GaAs: Nucleation without a critical nucleus size. *Phys. Rev. Lett.*, 95:125502, 2005.
- [46] T.E.M. Staab, R. Krause-Rehberg, U. Hornauer, and E. Zschech. Study of the precipitation process in AlMgSi (6061) and AlMgSiCu (6013) aluminum alloys by positron annihilation. *J. Mater. Sci.*, 41(4):1059–1066, 2006.
- [47] M. Haaks, T.E.M. Staab, and K. Maier. Analyzing the high-momentum part of positron annihilation Doppler spectra with a single Germanium detector. *Nucl. Instr. Meth.*, A569:829–, 2006.
- [48] T.E.M. Staab, C. Zamponi, M. Haaks, H. Modrow, and K. Maier. Atomic structure of pre-Guinier-Preston zones in Al-alloys. *phys. stat. sol. (RRL)*, 1(5):172–174, 2007.
- [49] M. Haaks and T.E.M. Staab. On the projection of coincidence Doppler spectra to one dimension. submitted to Nucl. Instr. Meth. A, July 2007.
- [50] T.E.M. Staab. Vacancies in magnesium silicide – stoichiometric vacancies preferred? *phys. stat. sol. (b)*, 246(7):1587–1589, 2009.
- [51] B. Klobes, T.E.M. Staab, and E. Dudzik. Early stages of decomposition in Al alloys investigated by X-ray absorption. *phys. stat. sol. (RRL)*, 2(4):182–184, 2008.
- [52] B. Klobes, T.E.M. Staab, M. Haaks, K. Maier, and I. Wieler. The role of quenched-in vacancies for the decomposition of aluminium alloys. *phys. stat. sol. (RRL)*, 2(5):224–226, 2008.
- [53] T.E.M. Staab, M. Haaks, and H. Modrow. Early precipitations stages in aluminium alloys – the role of quenched-in vacancies. *Appl. Surf. Sci.*, 255(1):132–135, 2008.
- [54] M. Haaks and T.E.M. Staab. High momentum analysis in Doppler broadening spectroscopy. *Defect and Diffusion Forum*, 255(1), 2008.
- [55] T.E.M. Staab, M. Haaks, B. Klobes, and K. Maier. Characterization of ageing: Nanostructure studies of early decomposition and precipitation stages in age-hardenable aluminium alloys. In J. Hirsch, B. Skrotzki, and G. Gottstein, editors, *Aluminium Alloys: Their Physical and Mechanical Properties, Band 1*, pages 744–750, Weinheim, Germany, 2009. ICAA-11, Wiley-VCH.
- [56] T.E.M. Staab, M. Haaks, I. Kohlbach, B. Klobes, B. Korff, and K. Maier. Atomic structure of pre-Guinier-Preston zones and pre-Guinier-Preston-Bagaryatsky zones in aluminum alloys. *J.Phys.: Conf. Series* in press, August 2008.
- [57] B. Klobes, O. Balarisi, M. Liu, T.E.M. Staab, and K. Maier. The effect of microalloying additions of au on the natural ageing of al-cu. *Acta Materialia*, 58(19):6379–6384, 2010.
- [58] B. Klobes, B. Korff, O. Balarisi, P. Eich, M. Haaks, K. Maier, R. Sottong, S.-M. Hühne, W. Mader, and T.E.M. Staab. Probing the defect state of individual precipitates grown in an al-mg-si alloy. *Phys. Rev.*, B82(5):054113, 2010.
- [59] I. Kohlbach, B. Korff, and T.E.M. Staab. (meta-)stable phases and pre-guinier-preston zones in alcu alloys constructed from ab initio relaxed atomic positions - comparison to experimental methods. *phys. stat. sol. b*, 247(9):2168–2178, 2010.

- [60] P. Folegati, M.J. Puska, T.E.M. Staab, and I. Kohlbach. Ab-initio calculation of Guinier-Preston-zones in AlCu-alloys. in preparation, March 2010.
- [61] B. Klobes, K. Maier, and T.E.M. Staab. Natural ageing in Al-Cu-Mg revisited from a local perspective. submitted to Phys. Rev. B, October 2011.