

Literaturverzeichnis

- [1] W. S. FANN, R. STORZ, H. W. K. TOM UND J. BOKOR. Electron thermalization in gold. *Phys. Rev. B* **46**, 13592 – 5 (1992).
- [2] W. S. FANN, R. STORZ, H. W. K. TOM UND J. BOKOR. Direct Measurement of Nonequilibrium Electron-Energy Distributions in Subpicosecond Laser-Heated Gold Films. *Phys. Rev. Lett.* **68**, 2834 – 7 (1992).
- [3] T. JUHASZ, H. E. ELSAYED-ALI, G. O. SMITH, C. SUÁREZ UND W. E. BRON. Direct measurements of the transport of nonequilibrium electrons in gold films with different crystal structures. *Phys. Rev. B* **48**, 15488 (1993).
- [4] C.-K. SUN, F. VALLÉE, L. H. ACIOLI, E. P. IPPEN UND J. G. FUJIMOTO. Femtosecond-tunable measurement of electron thermalisation in gold. *Phys. Rev. B* **50**, 15337 – 15348 (1994).
- [5] P. B. CORKUM, F. BRUNEL, N. K. SHERMAN UND T. SRINIVASAN-RAO. Thermal Response of Metals to Ultrashort-Pulse Laser Excitation. *Phys. Rev. Lett.* **61**, 2886 – 2889 (1988).
- [6] H. E. ELSAYED-ALI, T. JUHASZ, G. O. SMITH UND W. E. BRON. Femtosecond thermoreflectivity and thermotransmissivity of polycrystalline and single-crystalline gold films. *Phys. Rev. B* **43**, 4488 – 4491 (1991).
- [7] A.A. MAZNEV, J. HOHLFELD UND J. GÜDDE. Surface Thermal Expansion of Metal under Femtosecond Laser Irradiation. *J. Appl. Phys.* **82**, 5082 (1997).
- [8] J. HOHLFELD, U. CONRAD, J.-G. MÜLLER, S.-S. WELLERSHOFF UND E. MATTHIAS. Femtosecond Time-Resolved Linear and Second-Order Reflectivity of Metals. In K. H. BENNEMANN (Herausgeber), „Nonlinear Optics in Metals“, Kapitel 4. Clarendon Press, Oxford (1998).
- [9] J. GÜDDE, J. HOHLFELD, J.G. MÜLLER UND E. MATTHIAS. Damage threshold dependence on electron-phonon coupling in Au and Ni films. *Appl. Surf. Sci.* **127-129**, 40–45 (1998).
- [10] S.-S. WELLERSHOFF, J. GÜDDE, J. HOHLFELD, J.G. MÜLLER UND E. MATTHIAS. The role of electron-phonon coupling in femtosecond laser damage of metals. *SPIE* **3343**, 378 (1998).

- [11] J. HOHLFELD, S.-S. WELLERSHOFF, J. GÜDDE, U. CONRAD, V. JÄHNKE UND E. MATTHIAS. Electron dynamics and energy deposition depth following optical excitation of metals. *Chem. Phys.* **251**(1–3), 237–58 (2000).
- [12] C. SUÁREZ, W. E. BRON UND T. JUHASZ. Dynamics and Transport of Electronic Carriers in Thin Gold Films. *Phys. Rev. Lett.* **75**, 4536 (1995).
- [13] J. HOHLFELD, J. G. MÜLLER, S.-S. WELLERSHOFF UND E. MATTHIAS. Time-resolved thermoreflectivity of thin gold films and its dependence on film thickness. *Appl. Phys. B* **64**, 387 (1997). Notice the printing error in eq. (1) which should be read: $C_e(T_e) \cdot \partial T_e / \partial t = \partial / \partial z (K \cdot \partial T_e / \partial z) - g(T_e - T_l) + P(z, t)$.
- [14] J. G. FUJIMOTO, J. M. LIU, E. P. IPPEN UND N. BLOEMBERGEN. Femtosecond Laser Interaction with Metallic Tungsten and Nonequilibrium Electron and Lattice Temperatures. *Phys. Rev. Lett.* **53**, 1837 – 1840 (1984).
- [15] R. YEN, J. M. LIU, N. BLOEMBERGEN, T. K. YEE, J. G. FUJIMOTO UND M. M. SALOUR. Picosecond laser interaction with metallic zirconium. *Appl. Phys. Lett.* **40**, 185 – 187 (1982).
- [16] X. Y. WANG, D. M. RIFFE, Y.-S. LEE UND M. C. DOWNER. Time-resolved electron-temperature measurement in a highly excited gold target using femtosecond thermionic emission. *Phys. Rev. B* **50**, 8016 (1994).
- [17] R. H. M. GROENEVELD, R. SPRIK UND A. LAGENDIJK. Ultrafast Relaxation of Electrons Probed by Plasmons at a Thin Silver Film. *Phys. Rev. Lett.* **64**, 784 – 787 (1990).
- [18] R. H. M. GROENEVELD, R. SPRIK UND A. LAGENDIJK. Effect of a nonthermal electron distribution on the electron- phonon energy relaxation process in noble metals. *Phys. Rev. B* **45**, 5079 – 5082 (1992).
- [19] H. E. ELSAYED-ALI UND J. W. HERMAN. Picosecond time-resolved surface-lattice temperature probe. *Appl. Phys. Lett.* **57**, 1508 – 1510 (1990).
- [20] C.-K. SUN, F. VALLÉE, L. H. ACIOLI, E. P. IPPEN UND J. G. FUJIMOTO. Femtosecond investigation of electron thermalisation in gold. *Phys. Rev. B* **48**, 12365 (1993).
- [21] R. W. SCHOENLEIN, W. Z. LIN, J. G. FUJIMOTO UND G. L. EESLEY. Femtosecond Studies of Nonequilibrium Electronic Processes in Metals. *Phys. Rev. Lett.* **58**, 1680 – 1683 (1987).
- [22] T. JUHASZ, H. E. ELSAYED-ALI, X. H. HU UND W. E. BRON. Time-resolved thermoreflectivity of thin gold films and its dependence on the ambient temperature. *Phys. Rev. B* **45**, 13819 – 13822 (1992).
- [23] H. E. ELSAYED-ALI, T. B. NORRIS, M. A. PESSOT UND G. A. MOUROU. Time-Resolved Observation of Electron-Phonon Relaxation in Copper. *Phys. Rev. Lett.* **58**, 1212 – 1215 (1987).

-
- [24] K. M. YOO, X. M. ZHAO, M. SIDDIQUE, R. R. ALFANO, D. P. OSTERMANN, M. RADPAVAR UND J. CUNNIFF. Femtosecond thermal modulation measurements of electron-phonon relaxation in niobium. *Appl. Phys. Lett.* **56**, 1908 – 1910 (1990).
 - [25] J. HOHLFELD, U. CONRAD UND E. MATTHIAS. Does femtosecond time-resolved second-harmonic generation probe electron temperatures at surfaces? *Appl. Phys. B* **63**, 541 (1996).
 - [26] J. HOHLFELD, D. GROSENICK, U. CONRAD UND E. MATTHIAS. Femtosecond time-resolved reflection second-harmonic generation on polycrystalline copper. *Appl. Phys. A* **60**, 137 – 142 (1995).
 - [27] O. B. WRIGHT. Dynamics of ultrafast stress generation in metals. *Journal de Physique IV* **4**, C7–701 (1994).
 - [28] O. B. WRIGHT. Ultrafast nonequilibrium stress generation in gold and silver. *Phys. Rev. B* **49**, 9985 (1994).
 - [29] O. B. WRIGHT UND V. E. GUSEV. Ultrafast acoustic phonon generation in gold. *Physica B* **219**, 770 (1996).
 - [30] O. B. WRIGHT UND V. E. GUSEV. Ultrafast generation of acoustic waves in copper. *IEEE Trans. Ultrason. Ferroelec. Frequency Control* **42**, 329 (1995).
 - [31] O. B. WRIGHT UND V. E. GUSEV. Acoustic generation in crystalline silicon with femtosecond optical pulses. *Appl. Phys. Lett.* **66**, 1190 (1995).
 - [32] S.-S. WELLERSHOFF, J. HOHLFELD, J. GÜDDE UND E. MATTHIAS. The role of electron-phonon coupling in femtosecond laser damage of metals. *Appl. Phys. A* **69**, S99–S107 (1999).
 - [33] U. CONRAD. Lineare und nichtlineare fs-zeitaufgelöste transiente Thermoreflexions-spekroskopie an Edelmetallen. Diplomarbeit, Freie Universität Berlin (1995).
 - [34] S.-S. WELLERSHOFF. fs-zeitaufgelöste Messung der filmdickenabhängigen Energierelaxation optisch angeregter Elektronen in Gold. Diplomarbeit, Freie Universität Berlin (1997).
 - [35] J. MÜLLER. Untersuchungen der Nichtgleichgewichts-Elektronendynamik in polykristallinen Gold- und Nickelfilmen mit fs-Zeitauflösung. Diplomarbeit, Freie Universität Berlin (1997).
 - [36] J. HOHLFELD. „Ultrafast Electron-, Lattice-, and Spin-Dynamics in Metals Investigated by Linear and Nonlinear Optical Techniques“. Dissertation, Freie Universität Berlin (1998). Verlag für Wissenschaft und Forschung, Berlin.
 - [37] S. I. ANISIMOV, B. L. KAPELIOVICH UND T. L. PEREL’MAN. Electron emission from metal surfaces exposed to ultrashort laser pulses. *Sov. Phys. JETP* **39**, 375 – 377 (1974).

- [38] M. BORN UND E. WOLF. „Principles of Optics“. Pergamon Press, Oxford, sixth Auflage (1980).
- [39] E. HECHT. „Optik“. Addison-Wesley, New York Bonn, 1. Auflage (1989).
- [40] KLEIN UND FURTAK. „Optics“. John Wiley, New York, 2. Auflage (1986).
- [41] M. AESCHLIMANN, M. BAUER UND S. PAWLIK. Competing nonradiative channels for hot electron induced surface photochemistry. *Chem. Phys.* **205**, 127 (1996).
- [42] M. AESCHLIMANN, M. BAUER, S. PAWLIK, W. WEBER, R. BURGERMEISTER, D. OBERLI UND H. C. SIEGMANN. Ultrafast Spin-Dependent Electron Dynamics in fcc Co. *Phys. Rev. Lett.* **79**, 5158 (1997).
- [43] R. H. M. GROENEVELD. „Femtosecond spectroscopy on electrons and phonons in noble metals“. Dissertation, University of Amsterdam, Amsterdam (1992).
- [44] D. PINES UND P. NOZIÈRES. „The Theory of Quantum Liquids“, Band 1. W. A. Benjamin, New York (1966).
- [45] D. BEJAN UND G. RAŞEEV. Nonequilibrium electron distribution in metals. *Phys. Rev. B* **55**, 4250 (1997).
- [46] M. BONN, S. FUNK, CH. HESS, D. N. DENZLER, C. STAMPFL, M. SCHEFFLER, M. WOLF UND G. ERTL. Phonon- Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001). *Science* **285**, 1042 – 5 (1999).
- [47] D. N. DENZLER. Untersuchungen zur Ultrakurzzeitdynamik photostimulierter Oberflächenreaktionen und der Energierelaxation in Metallen. Diplomarbeit, Freie Universität Berlin (1999).
- [48] S. FUNK, M. BONN, D. N. DENZLER, CH. HESS, M. WOLF UND G. ERTL. Desorption of CO from Ru(001) induced by near-infrared femtosecond laser pulses. *J. Chem. Phys.* (2000). accepted for publication.
- [49] F. BUDDE, T. F. HEINZ, M. M. T. LOY, J. A. MISEWICH, F. DE ROUGEMONT UND H. ZACHARIAS. Femtosecond time-resolved measurement of desorption. *Phys. Rev. Lett.* **23**, 3024 (1991).
- [50] L. M. STRUCK, L. J. RICHTER, S. A. BUNTIN, R. R. CAVANAGH UND J. C. STEPHENSON. Femtosecond laser-induced desorption of CO from Cu(100): Comparison of theory and experiment. *Phys. Rev. Lett.* **77**, 4576 (1996).
- [51] F. BUDDE, T. F. HEINZ, A. KALAMARIDES, M. M. T. LOY UND J. A. MISEWICH. Vibrational distributions in desorption induced by femtosecond laser pulses: coupling of adsorbate vibration to substrate electronic excitation. *Surf. Sci.* **283**, 143 (1993).
- [52] S. D. BRORSON, J. G. FUJIMOTO UND E. P. IPPEN. Femtosecond Electronic Heat-Transport Dynamics in Thin Gold Films. *Phys. Rev. Lett.* **59**, 1962 – 1965 (1987).

-
- [53] W. GREINER, L. NEISE UND H STÖCKER. „Thermodynamik und Statistische Mechanik“, Band 9 aus „Theoretische Physik“. Verlag Harri Deutsch, Frankfurt am Main, 1 Auflage (1987).
- [54] N. W. ASHCROFT UND N. D. MERMIN. „Solid State Physics“. Saunders College Publishing, Philadelphia, 1. Auflage (1976).
- [55] CH. KITTEL. „Einführung in die Festkörperphysik“. R. Oldenbourg Verlag, München Wien, 10. Auflage (1993).
- [56] A. P. KANAVIN, I. V. SMETANIN, V. A. ISAKOV, YU. V. AFANASIEV, B. N. CHICHKOV, B. WELLEGEHAUSEN, S. NOLTE, C. MOMMA UND A. TÜNNERMANN. Heat transport in metals irradiated by ultrashort laser pulses. *Phys. Rev. B* **57**, 14698 – 14703 (1998).
- [57] J. M. ZIMAN. „Electrons and Phonons“. Oxford University Press, London, 1. Auflage (1960).
- [58] S. D. BRORSON, A. KAZEROONIAN, J. S. MOODERA, D. W. FACE, T. K. CHENG, E. P. IPPEN, M. S. DRESSELHAUS UND G. DRESSELHAUS. Femtosecond Room-Temperature Measurement of the Electron-Phonon Coupling Constant λ in Metallic Superconductors. *Phys. Rev. Lett.* **64**, 2172 – 2175 (1990).
- [59] P. B. ALLEN. Theory of Thermal Relaxation of Electrons in Metals. *Phys. Rev. Lett.* **59**, 1460 – 1463 (1987).
- [60] A. MELIKYAN, H. MINASSIAN, A. GUERRA III UND W. WU. On the theory of relaxation of electrons excited by femtosecond laser pulses in thin metallic films. *Appl. Phys. B* **68**, 411 (1999).
- [61] A. H. WILSON. „The Theory of Metals“. Cambridge University Press, Cambridge (1954).
- [62] P. VAN HALL. Monte-Carlo Simulationen der Elektronenverteilungsdynamik in Gold, COBRA Inter-University Research Institute on Communication Technology, Eindhoven University of Technology.
- [63] J. SIEGEL, K. ETTRICH, E. WELSCH UND E. MATTHIAS. UV-laser ablation of ductile and brittle metal films. *Appl. Phys. A* **64**, 213 (1997). Notice the printing error in eq.(5) which should read: $F_c = \frac{F_f(z=0,\tau)L_f}{1-R} \frac{\rho_f c_f}{(b-1)e^{-d/L_f} + (b+1)e^{d/L_f}} \times \left[(1+b) \left(e^{d/L_f} - 1 \right) + (1-b) \left(e^{-d/L_f} - 1 \right) \right] + \frac{F_f(z=0,\tau)L_s}{1-R} \frac{2\rho_s c_s r}{(b-1)e^{-d/L_f} + (b+1)e^{d/L_f}}$.
- [64] M. VON ALLMEN. „Laser-Beam Interactions with Materials“, Band 2 aus „Springer Series in Materials Science“. Springer, Berlin, Heidelberg (1987).
- [65] J. H. BECHTEL. Heating of solid targets with laser pulses. *J. Appl. Phys.* **46**, 1585 – 1593 (1975).

- [66] D. JR. BURGESS, P.C. STAIR UND E. WEITZ. Calculations of the surface temperature rise and desorption temperature in laser-induced thermal desorption. *J. Vac. Sci. Tech. A* **4**, 1362 (1986).
- [67] S. PETZOLDT. „Der Einfluß intensiver Laserpulse auf Metalloberflächen: Vom Heizen bis zum laserinduzierten Plasma, beobachtet mit dem akustischen ‘Mirage-Effekt’“. Dissertation, Freie Universität Berlin (1995).
- [68] E. MATTHIAS, M. REICHLING, J. SIEGEL, O.W. KÄDING, S. PETZOLDT, H. SKURK, P. BIZENBERGER UND E. NESKE. The Influence of Thermal Diffusion on Laser Ablation of Metal Films. *Appl. Phys. A* **58**, 129 (1994).
- [69] S. PREUSS, E. MATTHIAS UND M. STUKE. Sub-picosecond UV-laser ablation of Ni films. *Appl. Phys. A* **59**, 79 (1994).
- [70] M. SPARKS UND E. LOH. Temperature dependence of absorptance in laser damage of metallic mirrors: I. Melting. *J. Opt. Soc. Am.* **69**, 847 (1979).
- [71] E. MATTHIAS, M. REICHLING, J. SIEGEL, O.W. KÄDING, S. PETZOLDT, H. SKURK, P. BIZENBERGER UND E. NESKE. Laser-Ablation and Thermal Diffusivities of Metal Films on Glass Substrates. In J. C. MILLER UND D. B. GEOHEGAN (Herausgeber), „Laser Ablation: Mechanisms and Application-II“, Band 288, Seite 305. American Institute of Physics, New York (1994).
- [72] MATTHIAS, E. AND SIEGEL, J. AND PETZOLDT, S. AND REICHLING, M. AND SKURK, H. AND KÄDING, O.W. AND NESKE, E. In-situ investigation of laser ablation of thin films. *Thin Solid Films* **254**, 139–46 (1995).
- [73] R. H. M. GROENEVELD, R. SPRIK UND A. LAGENDIJK. Femtosecond spectroscopy of electron-electron and electron-phonon energy relaxation in Ag and Au. *Phys. Rev. B* **51**(17), 11433 – 45 (1995).
- [74] S. S. JHA UND C. S. WARKE. Interband Contributions to Optical Harmonic Generation at a Metal Surface. *Phys. Rev.* **153**, 751 – 759 (1967).
- [75] K. C. RUSTAGI. Bilinear Optical Polarizability of Silver. *Il Nuovo Cimento B* **LIII**, 1178 – 1194 (1968).
- [76] G. PETROCELLI, S. MARTELLUCCI UND R. FRANCINI. Wavelength Dependence of Second-Harmonic Generation at the Copper Surface. *Appl. Phys. A* **56**, 263 – 266 (1993).
- [77] Photoemissionsmessung an polykristallinem Kupfer von S. Funk, AG Prof. Dr. W. Eberhardt, Institut für Festkörperforschung, Forschungszentrum Jülich GmbH.
- [78] E. D. PALIK (Herausgeber). „Handbook of optical constants of solids“. Academic Press, San Diego (1998).

-
- [79] P. F. MOULTON. Spectroscopic and laser characteristics of Ti:Al₂O₃. *J. Opt. Soc. Am. B* **3**, 125 – 133 (1986).
- [80] P. ALBERS, E. STARK UND G. HUBER. Continuous-wave laser operation and quantum efficiency of titanium-doped sapphire. *J. Opt. Soc. Am. B* **3**(1), 134–9 (1 1986).
- [81] H. HAKEN. „Licht und Materie II, Laser“. Bibliographisches Institut, Zürich (1981).
- [82] W. DEMTRÖDER. „Laserspektroskopie“. Springer-Verlag, Berlin, 2. Auflage (1991).
- [83] Y. R. SHEN. „The principles of nonlinear optics“. John Wiley and Sons, New York, 1. Auflage (1984).
- [84] F. KRAUSZ, M. E. FERMANN, T. BRABEC, P. F. CURLEY, M. HOFER, M. H. OBER, CH. SPIELMANN, E. WINTNER UND A. J. SCHMIDT. Femtosecond Solid-State Lasers. *IEEE J. Quantum Electron.* **28**, 2097 – 2122 (1992).
- [85] R. L. FORK, O. E. MARTINEZ UND J. P. GORDON. Negative dispersion using pairs of prisms. *Opt. Lett.* **9**, 150 (1984).
- [86] R. L. FORK, O. E. MARTINEZ UND J. P. GORDON. Negative group-velocity dispersion using refraction. *J. Opt. Soc. Am.* **1**, 1003 (1984).
- [87] R. L. FORK, C. H. BRITO-CRUZ, P.C. BECKER UND C .V. SHANK. Compression of optical pulses to six femtoseconds by using cubic phase compensation. *Opt. Lett.* **12**, 483 – 485 (1987).
- [88] D. STRICKLAND UND G. MOUROU. Compression of amplified chirped optical pulses. *Opt. Commun.* **55**(6), 447 – 9 (1985).
- [89] D. STRICKLAND UND G. MOUROU. Compression of amplified chirped optical pulses. *Opt. Commun.* **56**(3), 219 – 21 (1985).
- [90] P. MAINE, D. STRICKLAND, P. BADO, M. PESSOT UND G. MOUROU. Generation of ultrahigh peak power pulses by chirped pulse amplification. *IEEE Journ. of Quant. Electr.* **QE 24**(2), 398 – 403 (1988).
- [91] TREACY. Optical Pulse Compression with Diffraction Gratings. *IEEE Journ. of Quant. Electr.* **QE 5**, 454 (1969).
- [92] Coherent. „Operator’s Manual, RegA Model 9000 Laser“ (1994).
- [93] T.B. NORRIS. Femtosecond pulse amplification at 250 khz with a ti:sapphire regenerative amplifier and application to continuum generation. *Opt. Lett.* **17**(14), 1009–11 (7 1992).
- [94] M.K. REED, M.S. ARMAS, M.K. STEINER-SHEPARD UND D.K. NEGUS. 30-fs pulses tunable across the visible with a 100-khz ti:sapphire regenerative amplifier. *Opt. Lett.* **20**(6), 605–7 (3 1995).

- [95] M.K. REED UND M.K.S. SHEPARD. Tunable infrared generation using a femtosecond 250 khz ti:sapphire regenerative amplifier. *IEEE J. Quantum Electron.* **32**(8), 1273–7 (8 1996).
- [96] M.K. REED, M.K. STEINER-SHEPARD UND D.K. NEGUS. Widely tunable femtosecond optical parametric amplifier at 250 khz with a ti:sapphire regenerative amplifier. *Opt. Lett.* **19**(22), 1855–7 (11 1994).
- [97] R. W. BOYD. „Nonlinear optics“. Academic Press, Boston, 1. Auflage (1992).
- [98] Fritz–Haber–Institut der Max–Planck–Gesellschaft, Berlin–Dahlem.
- [99] M. BONN, D. N. DENZLER, S. FUNK, M. WOLF, S.-S. WELLERSHOFF UND J. HOHLFELD. Ultrafast electron dynamics at metal surfaces: Competition between electron-phonon coupling and hot electron transport. *Phys. Rev. B* **61**(2), 1101–5 (2000).
- [100] D. A. PAPACONSTANTOPOULOS. „Handbook of the band structure of elemental solids“. Plenum Press, New York (1986).
- [101] J. P. GIRARDEAU-MONTAUT UND C. GIRARDEAU-MONTAUT. Theory of ultrashort nonlinear multiphoton photoelectric emission from metals. *Phys. Rev. B* **51**, 13560 – 7 (1995).
- [102] S. G. HAN, Z. V. VARDENY, K. S. WONG, O. G. SYMKO UND G. KOREN. Femtosecond optical detection of quasiparticle dynamics in high- T_c $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ superconducting thin films. *Phys. Rev. Lett.* **65**, 2708 – 11 (1990).
- [103] G. L. EESLEY, J. HEREMANS, M. S. MEYER, G. L. DOLL UND S. H. LIOU. Relaxation time of the order parameter in a high-temperature superconductor. *Phys. Rev. Lett.* **65**, 3445 – 8 (1990).
- [104] Quaterwave GmbH, Berlin–Treptow (früher “Berliner Institut für Optik GmbH – BIFO ”).
- [105] D. E. GRAY (Herausgeber). „American Institute of Physics Handbook“. McGraw-Hill, New York, 3. Auflage (1972).
- [106] A. M. JAMES UND M. P. LORD. „Macmillan’s Chemical and Physical Data“. The Macmillan Press Ltd, London (1992).
- [107] M. KHANTHA, D. P. POPE UND V. VITEK. Dislocation Screening and the Brittle-to-Ductile Transition: A Kosterlitz-Thouless Type Instability. *Phys. Rev. Lett.* **73**(5), 684 – 7 (1994).
- [108] W. L. McMILLAN. Transition Temperature of Strong-Coupled Superconductors. *Phys. Rev.* **167**(2), 331 – 44 (1968).

-
- [109] J. BRAUN, K. L. KOSTOV, G. WITTE, L. SURNEV, J. G. SKOFRONICK, S. A. SAFRON UND CH. WÖLL. Surface phonon dispersion curves for a hexagonally close packed metal surface: Ru(0001). *Surf. Sci.* **372**, 132 – 44 (1997).
 - [110] B. A. SANBORN, P. B. ALLEN UND D. A PAPACONSTANTOPOULOS. Empirical electron-phonon coupling constants and anisotropic electrical resistivity in hcp metals. *Phys. Rev. B* **40**(9), 6037 – 44 (1989).
 - [111] R. L. SUTHERLAND. „Handbook of nonlinear optics“. Marcel Dekker, New York, 1. Auflage (1996).
 - [112] M. REICHLING, Z. L. WU, E. WELSCH, D. SCHÄFER UND E. MATTHIAS. High Frequency Photothermal Reflectivity and Displacement Measurements on Thin Film Samples. In „Photoacoustic and Photothermal Phenomena III“, Springer Series in Optical Sciences 69, Seiten 698 – 701. Springer, Heidelberg, Berlin (1992).
 - [113] M. REICHLING UND H. GRÖNBECK. Harmonic Heat Waves in Isotropic Layered Systems and their Application for Thermal Conductivity Measurements. *J. Appl. Phys.* **75**(4), 1914 – 22 (1994).
 - [114] O. W. KÄDING, H. SKURK UND E. MATTHIAS. Thermal diffusivities of thin films measured by transient thermal gratings. *Journal de Physique IV* **4**, C7–619 – 22 (1994).
 - [115] O. W. KÄDING, H. SKURK, A. A. MAZNEV UND E. MATTHIAS. Transient thermal gratings at surfaces for thermal characterization of bulk materials and thin films. *Appl. Phys. A* **61**, 253 – 61 (1995).
 - [116] C. THOMSEN, H. T. GRAHN, H. J. MARIS UND J. TAUC. Surface generation and detection of phonons by picosecond light pulses. *Phys. Rev. B* **34**(6), 4129 – 38 (1986).
 - [117] O. B. WRIGHT UND K. KAWASHIMA. Coherent Phonon Detection from Ultrafast Surface Vibrations. *Phys. Rev. Lett.* **69**(11), 1668–71 (1992).
 - [118] O. B. WRIGHT UND T. HYOGUCHI. Ultrafast stress pulse detection by laser beam deflection. *Journal de Physique IV* **C7**, 705 – 8 (1994).
 - [119] V. E. GUSEV UND O. B. WRIGHT. Ultrafast nonequilibrium dynamics of electrons in metals. *Phys. Rev. B* **57**(5), 2878–88 (1998).
 - [120] O. B. WRIGHT, P. L. G. VENTZEK UND V. E. GUSEV. Electron-phonon dynamics in metals on ultrashort timescales. *Physica B* **263-264**, 193–5 (1999).
 - [121] A. LEVY UND M. AMER. Time-resolved surface expansion of metals under picosecond laser illumination. *Appl. Phys. Lett.* **66**, 3594 (1995).
 - [122] G. TAS UND H. J. MARIS. Electron diffusion in metals studied by picosecond ultrasonics. *Phys. Rev. B* **49**, 15046 (1994).

- [123] G. TAS. Noninvasive Picosecond Ultrasonic Detection of Ultrathin Interfacial Layers. *Appl. Phys. Lett.* **61**, 1787 (1992).
- [124] A. CAMPBELL. „The Science and Engineering of Microelectronic Fabrication“. Oxford University Press, Boston (1996).
- [125] B. C. STUART, M. D. FEIT, S. HERMAN, A. M. RUBENCHIK, B. W. SHORE UND M. D. PERRY. Optical ablation by high-power short-pulse lasers. *J. Opt. Soc. Am. B* **13**, 459 (1996).
- [126] Dipl.-Ing. G. Herbst, Fimea GmbH, Berlin–Adlershof.
- [127] S. PREUSS, A. DEMCHUK UND M. STUKE. Sub-picosecond UV laser ablation of metals. *Appl. Phys. A* **61**, 33 (1995).
- [128] S. NOLTE, C. MOMMA, H. JACOBS, A. TÜNNERMANN, B. N. CHICHKOV, B. WELLEGEHAUSEN UND H. WELLING. Ablation of metals by ultrashort laser pulses. *J. Opt. Soc. Am. B* **14**(10), 2716 – 22 (1997).
- [129] S. NOLTE, C. MOMMA, B. N. CHICHKOV UND H. WELLING. Mikrostrukturierung mit ultrakurzen Laserpulsen. *Phys. Blätter* **55**(6), 41–4 (1999).
- [130] M. LENZNER, J. KRÜGER, W. KAUTEK UND F. KRAUSZ. Precision laser ablation of dielectrics in the 10-fs regime. *Appl. Phys. A* **68**, 369 – 71 (1999).
- [131] A. SEMEROK, C. CHALÉARD, V. DETALLE, S. KOCON, J.-L. LACOUR, P. MAUCHIEN, P. MEYNADIER, C. NOUVELLON, P. PALIANOV, M. PERDRIX, G. PETITE UND B. SALLÉ. Laser ablation efficiency of pure metals with femtosecond, picosecond and nanosecond pulses. *SPIE* **3343**, 1049 – 1055 (1998).
- [132] A. SEMEROK, C. CHALÉARD, V. DETALLE, J.-L. LACOUR, P. MAUCHIEN, P. MEYNADIER, C. NOUVELLON, B. SALLÉ, P. PALIANOV, M. PERDRIX UND G. PETITE. Experimental investigations of laser ablation efficiency of pure metals with femtosecond, picosecond and nanosecond pulses. *Appl. Surf. Sci.* **138–139**, 311 – 4 (1999).
- [133] J. F. FIGUEIRA UND S. J. THOMAS. Damage thresholds at metal surfaces for short pulse IR lasers. *IEEE J. Quantum Electron.* **QE-18**(9), 1381 – 6 (1982).
- [134] Herr Becker, Materiallabor des Fachbereich Physik, FU Berlin.
- [135] Prof. Dr. K. Hausmann und Frau G. Drescher, Fachbereich Biologie (Zoologie).
- [136] Dr. A. Rosenfeld und Dr. D. Ashkenasi, MBI Berlin–Adlershof.
- [137] D. C. EMMONY, R. P. HOWSON UND L. J. WILLIS. Laser mirror damage in germanium at 10.6 μm . *Appl. Phys. Lett.* **23**, 598 – 600 (1973).
- [138] H. M. VAN DRIEL, J. E. SIPE UND J. F. YOUNG. Laser-Induced Periodic Surface Structure on Solids: A Universal Phenomenon. *Phys. Rev. Lett.* **49**, 1955 – 8 (1982).

-
- [139] H. M. VAN DRIEL UND K. DWORSCHAK. Locking of Optical and Thermodynamic Length Scales in Laser-Induced Melt-Solid Patterns on Silicon. *Phys. Rev. Lett.* **69**, 3487 – 90 (1992).
 - [140] A. E. SIEGMAN UND P. M. FAUCHET. Stimulated Wood's Anomalies on Laser-Illuminated Surfaces. *IEEE Journ. of Quant. Electr.* **QE 22**(8), 1384 – 1403 (1986).
 - [141] Y. JEE, M. F. BECKER UND R. M. WALSER. Laser-induced damage on single-crystal metal surfaces. *J. Opt. Soc. Am. B* **5**, 648 (1988).
 - [142] C. S. LEE, N. KOUMVAKALIS UND M. BASS. Spot-size dependence of laser-induced damage to diamond-turned Cu mirrors. *Appl. Phys. Lett.* **41**, 625 (1982).
 - [143] C. D. MARRS, W. N. FAITH, J. H. DANCY UND J. O. PORTEUS. Pulsed laser-induced damage of metals at 492 nm. *Appl. Opt.* **21**, 4063 (1982).
 - [144] S. J. THOMAS, R. F. HARRISON UND J. F. FIGUEURA. Observation of the morphology of laser-induced damage in copper mirrors. *Appl. Phys. Lett.* **40**, 1381 (1982).
 - [145] E. BEAUREPAIRE, J.-C. MERLE, A. DAUNOIS UND J.-Y. BIGOT. Ultrafast Spin Dynamics in Ferromagnetic Nickel. *Phys. Rev. Lett.* **76**, 4250 (1996).
 - [146] M. I. KAGANOV, I. M. LIFSHITZ UND L. V. TANATAROV. Relaxation between Electrons and the Crystalline Lattice. *Sov. Phys. JETP* **4**, 173 – 178 (1957).
 - [147] J. LAUZERAL, D. WALGRAEF UND N. M. GHONIEM. Rose Deformations Patterns in Thin Films Irradiated by Focused Laser Beams. *Phys. Rev. Lett.* **79**, 2706 – 9 (1997).