

REFERENCES

- [1] W. H. MEIKLEJOHN and C. P. BEAN, *New magnetic anisotropy*, Phys. Rev. **105**, 904 (1957).
- [2] M. N. BAIBICH, J. M. BROTO, A. FERT, F. NGUYEN VAN DAU, F. PETROFF, P. EITENNE, G. CREUZET, A. FRIEDERICH, and J. CHAZELAS, *Giant magnetoresistance of (001)Fe/(001)Cr magnetic superlattices*, Phys. Rev. Lett. **61**, 2472 (1988).
- [3] G. BINASCH, P. GRÜNBERG, F. SAURENBACH, and W. ZINN, *Enhanced magnetoresistance in layered magnetic structures with antiferromagnetic interlayer exchange*, Phys. Rev. B **39**, 4828 (1989).
- [4] T. J. REGAN, H. OHLDAG, C. STAMM, F. NOLTING, J. LÜNING, J. STÖHR, and R. L. WHITE, *Chemical effects at metal/oxide interfaces studied by x-ray absorption spectroscopy*, Phys. Rev. B **64**, 214422 (2001).
- [5] S. I. CSISZAR, M. W. HAVERKORT, Z. HU, A. TANAKA, H. H. HSIEH, H.-J. LIN, C. T. CHEN, T. HIBMA, and L. H. TJENG, *Controlling orbital moment and spin orientation in CoO layers by strain*, Phys. Rev. Lett. **95**, 187205 (2005).
- [6] F. RADU, M. ETZKORN, R. SIEBRECHT, T. SCHMITTE, K. WESTERHOLT, and H. ZABEL, *Interfacial domain formation during magnetization reversal in exchange-biased CoO/Co bilayers*, Phys. Rev. B **67**, 134409 (2003).
- [7] J. S. KOUVEL, *Exchange anisotropy in FeAl alloy*, J. Appl. Phys. **30**, S313 (59).
- [8] J. S. KOUVEL and C. D. JR. GRAHAM, *Exchange anisotropy in disordered NiMn*, J. Appl. Phys. **30**, S312 (1959).
- [9] A. P. MALOZEMOFF, *Random-field model of exchange anisotropy at rough ferromagnetic-antiferromagnetic interfaces*, Phys. Rev. B **35**, 3679 (1987).

- [10] A. P. MALOZEMOFF, *Heisenberg-to-Ising crossover in a random-field model with uniaxial anisotropy*, Phys. Rev. B **37**, 7673 (1988).
- [11] N. C. KOON, *Calculations of exchange bias in thin films with ferromagnetic/antiferromagnetic interfaces*, Phys. Rev. Lett. **78**, 4865 (1997).
- [12] D. MAURI, H. C. SIEGMANN, P. S. BAGUS, and E. KAY, *Simple model for thin ferromagnetic films exchange coupled to an antiferromagnetic substrate*, J. Appl. Phys. **62**, 3047 (1987).
- [13] F. NOLTING, A. SCHOLL, J. STOHR, J. W. SEO, J. FOMPEYRINE, H. SIEGWART, J. P. LOCQUET, S. ANDERS, J. LUNING, E. E. FULLERTON, M. F. TONEY, M. R. SCHEINFEIN, and H. A. PADMORE, *Direct observation of the alignment of ferromagnetic spins by antiferromagnetic spins*, Nature **405**, 767 (2000).
- [14] C. TIEG, W. KUCH, S. G. WANG, and J. KIRSCHNER, *Growth, structure, and magnetism of single-crystalline $Ni_xMn_{(1-x)}$ films and NiMn/Co bilayers on Cu(001)*, Phys. Rev. B 094420 (2006).
- [15] J. STÖHR, *Exploring the microscopic origin of magnetic anisotropies with X-ray magnetic circular dichroism (XMCD) spectroscopy*, J. Magn. Magn. Mater. **200**, 470 (1999).
- [16] J. STÖHR and R. NAKAJIMA, *X-ray spectro-microscopy of complex materials and surfaces*, IBM J. Res. Develop. **42**, 73 (1998).
- [17] GERRIT VAN DER LAAN, BERNARD T. THOLE, GEORGE A. SAWATZKY, JEROEN B. GOEDKOOP, JOHN C. FUGGLE, JEAN-MARC ESTEVA, RAMESH KARNATAK, J. P. REMEIKA, and HANNA A. DABKOWSKA, *Experimental proof of magnetic x-ray dichroism*, Phys. Rev. B **34**, 6529 (1986).
- [18] S. ALTIERI, L.H. TJENG, and G.A. SAWATZKY, *Ultrathin oxide film on metals: new physics and new chemistry*, Thin Solid Films **400**, 9 (2001).
- [19] H. OHLDAG, T. J. REGAN, J. STÖHR, A. SCHOLL, F. NOLTING, J. LUNING, C. STAMM, S. ANDERS, and R. L. WHITE, *Spectroscopic identification and direct imaging of interfacial magnetic spins*, Phys. Rev. Lett. (2001).
- [20] W. KUCH, L. CHELARU, F. OFFI, J. WANG, M KOTSUGI, and J. KIRSCHNER, *Three-dimensional noncollinear antiferromagnetic order in single-crystalline FeMn ultrathin films*, Phys. Rev. Lett. **92**, 017201 (2004).
- [21] J. CAMARERO, J. MIGUEL, J. B. GOEDKOOP, J. VOGEL, F. ROMANENS,

- S. PIZZINI, F. GARCIA, J. SORT, B. DIENY, and N. B. BROOKES, *Magnetization reversal, asymmetry, and role of uncompensated spins in perpendicular exchange coupled systems*, Appl. Phys. Lett. **89**, 232507 (2006).
- [22] W. H. MEIKLEJOHN and C. P. BEAN, *New magnetic anisotropy*, Phys. Rev. **105**, 904 (1957).
- [23] W. H. MEIKLEJOHN, *Exchange anisotropy—a review*, J. Appl. Phys. **33**, 1328 (1962).
- [24] C. P. BEAN, *Structure and properties of thin films*, Wiley, New York (1960).
- [25] I. S. JACOBS, *Magnetism*, number 271, Academic Press, New York (1963).
- [26] J. S. KOUVEL, C. D. JR. GRAHAM, and I. S. JACOBS, *Ferromagnetism and antiferromagnetism in disordered Ni-Mn alloys*, J. Phys. Radium **20**, 198 (1959).
- [27] K. TAKANO, *Exchange Anisotropy in Thin Film Bilayers of Nickel Cobalt Monoxide and Various Ferromagnetic Materials*, Ph.D. thesis, University of California, San Diego (1998).
- [28] S. O. DEMOKRITOV, *Biquadratic interlayer coupling in layered magnetic systems*, J. Phys D: Appl. Phys. **31**, 925 (1998).
- [29] K. TAKANO, R. H. KODAMA, A. E. BERKOWITZ, W. CAO, and G. THOMAS, *Interfacial uncompensated antiferromagnetic spins: Role in unidirectional anisotropy in polycrystalline Ni₈₁Fe₁₉/CoO bilayers*, Phys. Rev. Lett. **79**, 1130 (1997).
- [30] U. NOWAK, K. D. USADEL, J. KELLER, P. MILTÉNYI, B. BESCHOTEN, and G. GÜNTHERODT, *Domain state model for exchange bias. I. theory*, Phys. Rev. B **66**, 014430 (2002).
- [31] T. MEWES, R. LOPUSNIK, J. FASSBENDER, B. HILLEBRANDS, M. JUNG, D. ENGEL, A. EHRESMANN, , and H. SCHMORANZER, *Suppression of exchange bias by ion irradiation*, Appl. Phys. Lett. **76**, 1057 (2000).
- [32] P. MILTÉNYI, M. GIERLINGS, J. KELLER, B. BESCHOTEN, G. GÜNTHERODT, U. NOWAK, and K. D. USADEL, *Diluted antiferromagnets in exchange bias: Proof of the domain state model*, Phys. Rev. Lett. **84**, 4224 (2000).
- [33] A. MOUGIN, T. MEWES, M. JUNG, D. ENGEL, A. EHRESMANN, H. SCHMORANZER, J. FASSBENDER, , and B. HILLEBRANDS, *Local manip-*

- ulation and reversal of the exchange bias field by ion irradiation in FeNi/FeMn double layers, Phys. Rev. B **63**, 054417 (2001).
- [34] H. SHI, D. LEDERMAN, and E. E. FULLERTON, Exchange bias in $Fe_xZn_{1-x}F_2/Co$ bilayers, J. Appl. Phys. **91**, 7763 (2002).
- [35] M. ALI, C. H. MARROWS, M. AL-JAWAD, B. J. HICKEY, A. MISRA, U. NOWAK, and K. D. USADEL, Antiferromagnetic layer thickness dependence of the IrMn/Co exchange-bias system, Phys. Rev. B **68**, 214420 (2003).
- [36] M. S. YERUKHIMOV, V. A. SEREDKIN, and V. Y. YAKOVCHUK, Domain-structure and magnetic reversal of films with unidirectional and uniaxial anisotropy, Phys. Met. Metall. **52**, 45 (1981).
- [37] N. M. SALANSKII, E. G. KHASANOV, and K. M. MUKIMOV, Hysteresis loops of 2-layer films couples by ferro-antiferromagnetic interaction, Sov. Phys. Solid State **17**, 1865 (1976).
- [38] A. E. BERKOVITZ and J. H. GREINER, Exchange anisotropy and strain interactions in the Ni-NiO system, J. Appl. Phys. **36**, 3330 (1965).
- [39] K. NISHIOKA, C. HOU, H. FUJIWARA, and R. D. METZGER, Grain size effect on ferro-antiferromagnetic coupling of NiFe/FeMn systems, J. Appl. Phys. **80**, 4528 (1996).
- [40] E. FULCOMER and S. H. CHARAP, Temperature and frequency dependence of exchange anisotropy effects in oxidized NiFe films, J. Appl. Phys. **43**, 4184 (1972).
- [41] L. NEEL, Etude theorique - du couplage ferro-antiferromagnetique dans les couches minces, Ann. Phys. **1**, 61 (1967).
- [42] Magnetic properties of oxides with various other structures, Landolt-Börnstein New Series III/27g (1984).
- [43] M. GRUYTERS and D. RIEGEL, Optimized exchange biasing by controlled *in situ* oxidation, J. Appl. Phys. **88** (2000).
- [44] R. SHANTYR, Scanning tunneling microscopy/scanning tunneling spectroscopy on growth, atomic and electronic structure of Co oxide and Mn oxide films on Ag(001), Ph.D. thesis, Martin-Luther-Universität Halle-Wittenberg (2004).
- [45] BÄRBEL FROMME, *d-d excitations in transition-metal oxides*, volume III/27g, Springer-Verlag GmbH, Berlin (1992).

- [46] C. MOCUTA, *Croissance, structure et magnetisme de films metallique supports par des oxides polaires*, Ph.D. thesis, Universite Joseph Fourier (2000).
- [47] M. D. RECHTIN and B. L AVERBACH, *Long-range magnetic ordering in CoO*, Phys. Rev. B **6** (1972).
- [48] W. JAUCH, M. REEHUIS, H. J. BLEIF, F. KUBANEK, and P. PATTISON, *Crytallographic symmetry and magnetic structure of CoO*, Phys. Rev. B **64** (2001).
- [49] N. C. TOMBS and H. P. ROOKSBY, *Structure transition and antiferromagnetism in magnetite*, Acta Crystallographica **4**, 474 (1951).
- [50] T. NAGAMIYA, KUBO, and YOSHIDA, *Antiferromagnetism*, Adv. in phys. **4**, 1 (1955).
- [51] W. L. ROTH, *Magnetic structure of MnO, FeO, CoO, and NiO*, Phys. Rev. **110** (1958).
- [52] B. VAN LAAR, *Multi-spin-axis structure for CoO*, Phys. Rev. **138**, A584 (1965).
- [53] B. VAN LAAR, J. SCHWEIZER, and R. LEMAIRE, *Neutron-diffraction investigation of CoO single crystals*, Phys. Rev. **141**, 538 (1966).
- [54] D. HERRMANN-RONZAUD, P. BURLET, and J. ROSSAT-MIGNOD, *Equivalent type-ii magnetic structure: CoO, a collinear antiferromagnet*, J. Phys. C: Solid State Phys. **11** (1978).
- [55] S. SAITO, K. NAKAHIGASHI, and Y. SHIMOMURA, *X-ray diffraction study on coo*, J. Phys. Soc. Japan **21** (1966).
- [56] T. NAGAMIYA, S. SAITO, Y. SHIMOMURA, and E. UCHIDA, *Magnetic structure of CoO*, J. Phys. Soc. Japan **20**, 1285 (1965).
- [57] J. H. GREINER, A. E. BERKOVITZ, and J. E. WEIDENBORNER, *Properties of single crystal CoO films on MgO*, J. Appl. Phys. **37**, 2149 (1966).
- [58] M. E. FINE, *Magnetomechanical effects in an antiferromagnet, CoO*, Rev. Mod. Phys. **25** (1953).
- [59] K. TOMIYASU, T. INAMI, and N. IKEDA, *Magnetic structure of CoO studied by neutron and synchrotron x-ray diffraction*, Phys. Rev. B **70** (2004).
- [60] I. SEBASTIAN, T. BERTRAMS, K. MEINELB, and H. NEDDERMEYER, *Scanning tunnelling microscopy on the growth and structure of NiO(100) and CoO(100) thin films*, Faraday Discussions **114**, 129 (1999).

- [61] J. WANG, *Low Energy Electron Diffraction studies of transition metal oxides surfaces and films*, Ph.D. thesis, Martin-Luther-Universitaet (2005).
- [62] F. RADU, *Fundamental Aspects of Exchange Bias Effect in AF/F Bilayers and Multilayers*, Ph.D. thesis, Ruhr-Univärsität Bochum (2005).
- [63] M. GIERLINGS, M.J. PRANDOLINI, M. GRUYTERS, T. FUNK, D. RIEGEL, and W.D. BREWER, *A study of the induced magnetism in the au spacer layer of Co/Au/CoO exchange-bias trilayers and related systems*, The European Physical Journal B **45**, 137 (2005).
- [64] MATEK GMBH, *Jülich D-52428, Germany*.
- [65] J. KIRSCHNER, H. ENGELHARD, and D. HARTUNG, *An evaporation source for ion beam assisted deposition in ultrahigh vacuum*, Rev. Sci Instrum. **73** (2002).
- [66] C. TIEG, *Growth, structure and magnetic properties of single-crystalline antiferromagnetic NiMn films and bilayers of NiMn and Co on Cu(001)*, Ph.D. thesis, Martin-Luther-Universität (2005).
- [67] STAIB INSTRUMENTS, *Langenbach D-85416, Germany*.
- [68] M. A. VAN HOVE, W. H. WEINBERG, and C. M. CHAN, *LEED: Experiment, Theory and Surface Structure Determination*, volume 6, Springer Series in Surface Science (1986).
- [69] J. B. PENDRY, *LEED: The Theory and its Application to Determination of Surface Science*, Techniques of Physics (1974).
- [70] J. B. PENDRY, *Reliability factors for LEED calculations*, J. Phys. C **13**, 937 (1980).
- [71] C. DAVISSON and L. H. GERMER, *Diffraction of electrons by a crystal of nickel*, Phys. Rev **30**, 705 (1927).
- [72] M. A. VAN HOVE, S. Y. TONG, and M. H. ELCONIN, *Surface structure refinements of 2H—MoS₂, 2H—NbSe₂ and W(100)p(2×1)—O via new reliability factors for surface crystallography*, Surf. Sci. **64**, 85 (1977).
- [73] J. B. PENDRY, *LEED: The Theory and its Application to Determination of Surface Science*, Academic Press, New York (1974).
- [74] F. OFFI, W. KUCH, and J. KIRSCHNER, *Structural and magnetic properties of Fe_xMn_{1-x} thin films on Cu(001) and on Co/Cu(001)*, Phys. Rev. B **66**, 064419 (2002).

- [75] OMMICRON NANO TECHNOLOGY GMBH, Taunusstein D-65232, Germany.
- [76] G. BINNIG, H. ROHRER, CH. GERBER, and E. WEIBEL, *Tunneling through a controllable vacuum gap*, Appl. Phys. Lett. **40**, 178 (1981).
- [77] G. BINNIG, H. ROHRER, CH. GERBER, and E. WEIBEL, *Surface studies by scanning tunneling microscopy*, Phys. Rev. Lett. **49**, 57 (1982).
- [78] A. RONNAU, *A Closer Look at the TiO₂(110) Surface with STM*, Ph.D. thesis, University of Aarhus (2003).
- [79] Y. CHEN, W. XU, and J. HUANG, *A simple new technique for preparing STM tips*, J. of Phys. E: Sci. Instrum. **22**, 455 (1989).
- [80] E. R. MOOG and S. D. BADER, *SMOKE signals from ferromagnetic monolayers - p(1 × 1) Fe/Au(100)*, Superlatt. Microstruct. **1**, 543 (1985).
- [81] Z. Q. QIU and S. D. BADER, *Surface magneto-optic Kerr effect (SMOKE)*, Journal of Magnetism and Magnetic Materials **200**, 664 (1999).
- [82] K SATO, *Measurement of magneto-optical Kerr effect using piezo-birefringent modulator*, Jpn. J. Appl. Phys. **20**, 2403 (1981).
- [83] BESSY GMBH, Berlin D-12489, Germany.
- [84] F. M. F. DE GROOT, *X-ray absorption and dichroism of transition metals and their compounds*, Journal of Electron Spectroscopy and Related Phenomena **67**, 592 (1994).
- [85] MICHEL VAN VEENENDAAL, J. B. GOEDKOOP, and B. T. THOLE, *Polarized x-ray fluorescence as a probe of ground state properties*, Phys. Rev. Lett. **77**, 1508 (1996).
- [86] JAN VOGEL and MAURIZIO SACCHI, *Polarization and angular dependence of the L_{2,3} absorption edges in Ni(110)*, Phys. Rev. B **49**, 3230 (1994).
- [87] REIKO NAKAJIMA, J. STÖHR, and Y. U. IDZERDA, *Electron-yield saturation effects in L-edge x-ray magnetic circular dichroism spectra of Fe, Co, and Ni*, Phys. Rev. B **59**, 6421 (1999).
- [88] J. L. ERSKINE and E. A. STERN, *Calculation of the M₂₃ magneto-optical absorption spectrum of ferromagnetic nickel*, Phys. Rev. B **12**, 5016 (1975).
- [89] B. T. THOLE, P. CARRA, F. SETTE, and G. VAN DER LAAN, *X-ray circular dichroism as a probe of orbital magnetization*, Phys. Rev. Lett. **68**, 1943 (1992).
- [90] PAOLO CARRA, B. T. THOLE, MASSIMO ALTARELLI, and XINDONG

- WANG, X-ray circular dichroism and local magnetic fields, Phys. Rev. Lett. **70**, 694 (1993).
- [91] M. ALTARELLI, Orbital-magnetization sum rule for x-ray circular dichroism: A simple proof, Phys. Rev. B **47**, 597 (1993).
- [92] B. P. TONNER and G.R HARP, Photoelectron microscopy with synchrotron radiation, Rev. Sci. Instrum. **59**, 853 (1988).
- [93] W. ENGEL, M. E. KORDESCH, H. H. ROTHERMUND, and S. KUBALA, A uhv-compatible photoelectron emission microscope for applications in surface science, Ultramicroscopy **36**, 148 (1991).
- [94] E. BAUER, Photoelectron microscopy, J. Phys. Cond. Mat. **13**, 11391 (2001).
- [95] A. SCHOLL, J. STOHR, J. LÜMLNING, J. W. SEO, J. FOMPEYRINE, H. SIEGWART, J.-P. LOCQUET, F. NOLTING, S. ANDERS, E. E. FULLERTON, M. R. SCHEINFEIN, and H. A. PADMORE, Observation of antiferromagnetic domains in epitaxial thin films, Science **287**, 1014 (2000).
- [96] J. STOHR, Y. WU, B. D. HERMSMEIER, M. G. SAMANT, G.R HARP, S. KORANDA, D. DUNHAM, and B. P. TONNER, Element-specific magnetic microscopy with circularly polarized x-rays, Science **259**, 658 (1993).
- [97] W. KUCH, X-ray magnetic circular dichroism for the quantitative element-resolved magnetic microscopy, Physica Scripta **T109**, 89 (2004).
- [98] C.M. SCHNEIDER and G. SCHÖNHENSE, Investigating surface magnetism by means of photoexcitation electron emission microscopy, Rep. Prog. Phys. **65**, R1785 (2002).
- [99] G. SCHÖNHENSE, Imaging of magnetic structures by photoemission electron microscopy, J. Phys. Cond. Mat. **11**, 9517 (1999).
- [100] FOCUS GMBH, Hüinstetten-Kesselbach D-65510, Germany.
- [101] CH. ZIETHEN, O. SCHMIDT, G.H. FECHER, C.M. SCHNEIDER, G. SCHÖNHENSE, R. FRÖMTER, M. SEIDER, K. GRZELAKOWSKI, M. MERKEL, D. FUNNEMANN, W. SWIECH, H. GUNDLACH, and J. KIRSCHNER, Mapping and magnetic imaging with high lateral resolution using a novel photoemission microscope, J. Elec. Spec. Rel. Phen. **88**, 983 (1998).
- [102] J. STÖHR and S. ANDERS, X-ray spectro-microscopy of complex materials and surfaces, IBM Journal of Research and Developmen **44**, 535 (2000).
- [103] VACUUM GENERATORS, Maunsell Road Hastings TN38 9NN, UK.

- [104] A. DI BONA, C. GIOVANARDI, and S. VALERI, *Growth and structure of Fe on MgO(001) studied by modulated electron emission*, Surf. Sci. **498**, 193 (2002).
- [105] M. T. KIEF and W. F. EGELHOFF, *Growth and structure of Fe and Co thin films on Cu(111), Cu(100), and Cu(110): A comprehensive study of metastable film growth*, Phys. Rev. B **47**, 10785 (1993).
- [106] G. VAN DER LAAN and B. T. THOLE, *Strong magnetic x-ray dichroism in 2p absorption spectra of 3d transition-metal ions*, Phys. Rev. B **43**, 13401 (1991).
- [107] NILS WEBER, *Untersuchung von Übergangsmetallen und Übergangsmetalloxiden mit Synchrotronstrahlung*, Ph.D. thesis, Univ. of Düsseldorf (2001).
- [108] H. OHLDAG, *Exchange coupling of Co and Fe on antiferromagnetic NiO*, Ph.D. thesis, University of Düsseldorf (2003).
- [109] T. J. REGAN, *XAS and microscopy study of ferro and antiferromagnetic films*, Ph.D. thesis, Stanford University (2001).
- [110] S. I. CSISZAR, *X-ray diffraction and X-ray absorption of strained CoO and MnO thin films*, Ph.D. thesis, University of Groningen (2005).
- [111] F. C. VOOGT, T. FUJII, P. J. M. SMULDERS, L. NIESEN, M. A. JAMES, and T. HIBMA, *NO₂-assisted molecular-beam epitaxy of Fe₃O₄, Fe_{3-δ}O₄, and γ-Fe₂O₃ thin films on MgO(100)*, Phys. Rev. B **60**, 11193 (1999).
- [112] M. A. LANGELL, M. D. ANDERSON, G. A. CARSON, L. PENG, and S. SMITH, *Valence-band electronic structure of Co₃O₄ epitaxy on CoO(100)*, Phys. Rev. B **59**, 4791 (1999).
- [113] J. VAN ELP, J. L. WIELAND, H. ESKES, P. KUIPER, G. A. SAWATZKY, F. M. F. DE GROOT, and T. S. TURNER, *Electronic structure of CoO, Li-doped CoO, and LiCoO₂*, Phys. Rev. B **44**, 6090 (1991).
- [114] C. MOCUTA, A. BARBIER, and G. RENAUD, *CoO(111) surface study by surface X-ray diffraction*, Surf. Sci. **433–435**, 761 (1999).
- [115] A. HAHLIN, *Magnetism and Structure of thin 3d transition metal films*, Ph.D. thesis, University of Uppsala (2003).
- [116] ÉTIENNE DU TRÉMOLET DE LACHEISSERIE, editor, *Magnétisme*, EDP Science (1999).
- [117] M. HAVERKORT, *Spin and orbital degrees of freedom in transition metal oxides and oxide thin films studied by soft x-ray absorption spectroscopy*, Ph.D. thesis, Universität zu Köln (2005).

- [118] H. A. JAHN and E. TELLER, *Stability of polyatomic molecules in degenerate electronic states. I. Orbital degeneracy*, Proc. Roy. Soc. **161**, 220 (1937).
- [119] T. JO and T. SHISHIDOU, *Orbital magnetic moments of CoO and FeO and isotropic Co and Fe L_{2,3} absorption spectroscopy*, J. Phys. Soc. Japan (1998).
- [120] F. OFFI, W. KUCH, L. CHELARU, K. FUKUMOTO, M KOTSUGI, and J. KIRSCHNER, *Induced Fe and Mn magnetic moments in Co-FeMn bilayers on Cu(001)*, Phys. Rev. B **67**, 094419 (2003).
- [121] H. OHLDAG, A. SCHOLL, F. NOLTING, E. ARENHOLTZ, S. MAAT, A.T. YOUNG, M. CAREY, and J. STÖHR, *Correlation between exchange bias and pinned interfacial spins*, Phys. Rev. Lett. **91**, 017203 (2003).
- [122] S. ROY, M. R. FITZSIMMONS, S. PARK, M. DORN, O. PETRACIC, I. V. ROSHCHIN, Z.-P. LI, X. BATLLE, R. MORALES, A. MISRA, X. ZHANG, K. CHESNEL, J. B. KORTRIGHT, S. K. SINHA, and I. K. SCHULLER, *Depth profile of uncompensated spins in an exchange bias system*, Phys. Rev. Lett. **95**, 047201 (2005).
- [123] T. KACHEL, W. GUDAT, C. CARBONE, E. VESCOVO, S. BLÜGEL, U. ALKEMPER, and W. EBERHARDT, *Ferromagnetic order in ultrathin Rh layers on Fe(100)*, Phys. Rev. B **46**, 12888 (1992).
- [124] A. SCHERZ, H. WENDE, P. POULPOULOS, J. LINDNER, K. BABERSCHKE, P. BLOMQUIST, R. WÄPPLING, and N. B. WILHELM, F. BROOKS, *Induced V and reduced Fe moments at the interface of Fe/V(001)*, Phys. Rev. B **91**, 8760 (2001).
- [125] S. PIZZINI, A. FONTAINE, C. GIORGETTI, E. DARTYGE, J.F. BOBO, M. PIECUCH, and F. BAUDELET, *Evidence for the spin polarization of copper in Co/Cu and Fe/Cu multilayers*, Phys. Rev. Lett. **74**, 1470 (1995).
- [126] M. G. SAMANT, J. STÖHR, S. S. P. PARKIN, G. A. HELD, B. D. HERMSMEIER, F. HERMAN, M. VAN SCHILFGAARDE, L.-C. DUDA, D. C. MANCINI, N. WASSDAHL, and R. NAKAJIMA, *Induced spin polarization in Cu spacer layers in Co/Cu multilayers*, Phys. Rev. Lett. **72**, 1112 (1994).
- [127] J. W. FREELAND, R. H. KODAMA, M. VEDPATHAK, S. C. ERWIN, D. J. KEAVNEY, R. WINARSKI, P. RYAN, and R. A. ROSENBERG, *Induced Ge spin polarization at the Fe/Ge interface*, Phys. Rev. B **70**, 033201 (2004).
- [128] L. BRAICOVICH, G. GHIRINGHELLI, A. TAGLIAFERRI, G. VAN DER LAAN, E. ANNESE, and N. B. BROOKES, *Femtosecond dynamics in ferromagnetic*

- metals investigated with soft x-ray resonant emission, Phys. Rev. Lett. **95**, 267402 (2005).
- [129] M. FINAZZI, A. BRAMBILLA, L. DUO, G. GHIRINGHELLI, M. PORTALUPI, and F. CICCACCI, *Chemical effects at the buried NiO/Fe(001) interface*, Phys. Rev. B **70**, 235420 (2004).
- [130] S. BENEDETTI, P. LUCHES, M. LIBERATI, and S. VALERI, *Chemical reactions and interdiffusion at the Fe/NiO(001) interface*, Surf. Sci. **572**, L348 (2004).
- [131] P. LUCHES, V. BELLINI, S. COLONNA, L. DI GIUSTINO, F. MANGHI, S. VALERI, and F. BOSCHERINI, *Iron oxidation, interfacial expansion, and buckling at the Fe/NiO(001) interface*, Phys. Rev. Lett. **96**, 106106 (2004).
- [132] H. L. MEYERHEIM, R. POPESCU, J. KIRSCHNER, N. JEDRECY, M. SAUVAGE-SIMKIN, B. HEINRICH, and R. PINCHAUX, *Geometrical and compositional structure at metal-oxide interfaces: MgO on Fe(001)*, Phys. Rev. Lett. **87**, 076102 (2001).
- [133] C. TUSCHE, H. L. MEYERHEIM, F. U. HILLEBRECHT, and J. KIRSCHNER, *Evidence for a mixed conio layer at the Co/NiO(001) interface from surface x-ray diffraction*, Phys. Rev. B **73**, 125401 (2006).
- [134] W. KUCH, F. OFFI, L. CHELARU, M KOTSUGI, K. FUKUMOTO, and J. KIRSCHNER, *Magnetic interface coupling in single-crystalline Co/FeMn bilayers*, Phys. Rev. B **65**, 140408(R) (2002).
- [135] C. WON, Y. Z. WU, H. W. ZHAO, A. SCHOLL, A. DORAN, W. KIM, T. L. OWENS, X. F. JIN, and Z. Q. QIU, *Studies of FeMn/Co/Cu(001) films using photoemission electron microscopy and surface magneto-optic Kerr effect*, Phys. Rev. B **71**, 024406 (2005).
- [136] E. ARENHOLZ, G. VAN DER LAAN, R. V. CHOPDEKAR, and Y. SUZUKI, *Angle-Dependent Ni²⁺ X-Ray Magnetic Linear Dichroism: Interfacial Coupling Revisited*, Phys. Rev. Lett. **98**, 197201 (2007).
- [137] D. ALDERS, L. H. TJENG, F. C. VOOGT, T. HIBMA, G. A. SAWATZKY, C. T. CHEN, J. VOGEL, M. SACCHI, and S. IACOBUCCI, *Temperature and thickness dependence of magnetic moments in NiO epitaxial films*, Phys. Rev. B **57**, 11623 (1998).
- [138] R. D. COWAN, *The theory of atomic structure and spectra*, University of California Press (1981).

- [139] A. A. FREEMAN, K. W. EDMONDS, G. VAN DER LAAN, N. R. S. FARLEY, T. K. JOHAL, E. ARENHOLZ, R. P. CAMPION, C. T. FOXON, and B. L. GALLAGHER, *Giant anisotropy in x-ray magnetic linear dichroism in (Ga,Mn)As*, Phys. Rev. B **73**, 233303 (2006).
- [140] E. ARENHOLZ, G. VAN DER LAAN, R. V. CHOPDEKAR, and Y. SUZUKI, *Anisotropic x-ray magnetic linear dichroism at the Fe $L_{2,3}$ edges in Fe_3O_4* , Phys. Rev. B **74**, 094407 (2006).