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2012.10 ~ 科学技術振興機構 戦略的創造研究推進事業さきがけ「新物質科学と元素戦略」領域研究員 (兼任)

Education :

2005.3.25 Ph.D (Chemistry), Department of Chemistry, Tohoku University

東北大学大学院理学研究科化学専攻 博士課程修了 博士 (理学)

2002.3.26 M. Sc. of Engineering, Department of Innovative and Engineering Materials, Tokyo Institute of Technology

東京工業大学大学院総合理工学研究科物質科学創造専攻 修士課程修了

2000.3 B. Sc. Department of Inorganic Materials, Tokyo Institute of Technology

東京工業大学工学部無機材料工学科修了

Research interests :

ZnO related materials, epitaxial thin film growth, molecular beam epitaxy, quantum transport, oxide electronics

Professional career :

2002.4~2005.3 日本学術振興会特別研究員 (DC1)

2005.4~2006.3 東北大学金属材料研究所 超構造薄膜化学研究部門 博士研究員

2006.4~2007.3 日本学術振興会特別研究員 (PD) 勤務場所は同上

2007.4~2010.5 東北大学金属材料研究所 超構造薄膜化学研究部門 助教

2010.6~2012.8 東京大学大学院工学系研究科付属量子相エレクトロニクス研究センター 特任講師

2008.10~2012.3 科学技術振興事業団戦略的創造研究事業さきがけ 研究員兼任

2012.9~2013.3 東京大学大学院新領域創成科学研究科 物質系専攻 准教授

2012.10~ 科学技術振興事業団戦略的創造研究事業さきがけ 研究員兼任

2013.4~ 現職

Awards :

I, JSAP Young Scientist Award for the Presentation of an Excellent Paper (2001)

I, 19th Advanced Technology Award, Nippon broadcasting system, inc. prize (2005)

I, 22th Inoue Research Award for Young Scientists (2005)

I, 28th JSAP Award for the Most Promising Young Scientist (2006)

I, 48th Harada young Researcher Award (2008)

I, 7th Condensed-Matter Science Prize (2012)

Selected papers :

1, Trajectory of the anomalous Hall effect towards the quantized state in a ferromagnetic topological insulator

Nature Physics **10**, 731 (2014).

2, Dirac electron states formed at the heterointerface between a topological insulator and a conventional semiconductor.

Nature Materials **13**, 253 (2014).

3, Observation of the fractional quantum Hall effect in an oxide.

Nature Materials **9**, 889 (2010).

- 4, Quantum Hall-effect in polar oxide heterostructures.
Science **315**, 1388 (2007).
- 5, Blue light-emitting diode based on ZnO.
Japanese Journal of Applied Physics **44**, L643 (2005).
- 6, Repeated temperature modulation epitaxy for p-type doping and light-emitting diode based on ZnO.
Nature Materials **4**, 42 (2005).
- 7, Layer-by-layer growth of high-optical-quality ZnO film on atomically smooth and lattice relaxed ZnO buffer layer.
Applied Physics Letters **83**, 2784 (2003).

List of Publication

2014

- 1) Polarization-dependent Landau level crossing in a two-dimensional electron system in a MgZnO/ZnO heterostructure
D. Maryenko, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki
Physical Review B **90**, 245303 (2014).
- 2) Air-gap gating of MgZnO/ZnO heterostructures
T. Tambo, J. Falson, D. Maryenko, Y. Kozuka, A. Tsukazaki, M. Kawasaki
Journal of Applied Physics **116**, 084310 (2014).
- 3) Trajectory of anomalous Hall effect toward the quantized state in a ferromagnetic topological insulator
J. G. Checkelsky, R. Yoshimi, A. Tsukazaki, K. S. Takahashi, Y. Kozuka, J. Falson, M. Kawasaki, Y. Tokura
Nature Physics **10**, 731 (2014).
- 4) Spontaneous polarization driven Mg concentration profile reconstruction in MgZnO/ZnO heterostructures
K. Imasaka, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki
Applied Physics Letters **104**, 242112 (2014).
- 5) Photoinduced sign inversion of the anomalous Hall effect in EuO thin films
Y. Ohuchi, Y. Kozuka, N. Rezaei, M. S. Bahramy, R. Arita, K. Ueno, A. Tsukazaki, M. Kawasaki
Physical Review B **89**, 121114(R) (2014).
- 6) Dirac electron states formed at heterointerface between a topological-insulator and a conventional semiconductor
R. Yoshimi, A. Tsukazaki, K. Kikutake, J. G. Checkelsky, K. S. Takahashi, M. Kawasaki, Y. Tokura
Nature Materials **13**, 253 (2014).
- 7) Stability of two-dimensional skyrmions in thin films of $\text{Mn}_{1-x}\text{Fe}_x\text{Si}$ investigated by the topological Hall effect
T. Yokouchi, N. Kanazawa, A. Tsukazaki, Y. Kozuka, M. Kawasaki, M. Ichikawa, F. Kagawa, Y. Tokura
Physical Review B **89**, 064416 (2014).
- 8) Enhanced quantum oscillatory magnetization and non-equilibrium currents in an interacting electron system in MgZnO/ZnO with repulsive scatters
M. Brasse, S. M. Sauther, J. Falson, Y. Kozuka, A. Tsukazaki, Ch. Heyn, M. A. Wilde, M. Kawasaki, D. Grundler
Physical Review B **89**, 075307 (2014).
- 9) Challenges and opportunities of ZnO-related single crystalline heterostructures.
Y. Kozuka, A. Tsukazaki, M. Kawasaki
Applied Physics Review **1**, 011303 (2014).
- 10) Surface and interface engineering of ZnO based heterostructures fabricated by pulsed-laser deposition
A. Tsukazaki, A. Ohtomo, M. Kawasaki
Journal of Physics D: Applied Physics **47**, 034003 (2014).

2013

- 11) Rashba Spin-orbit interaction in a $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$ two-dimensional electron gas studied by electrically-detected electron spin resonance
Y. Kozuka, S. Teraoka, J. Falson, A. Oiwa, A. Tsukazaki, S. Tarucha, M. Kawasaki

Physical Review B **87**, 205411 (2013).

- 12) Systematic control of stress-induced anisotropy in pseudomorphic iron garnet thin films
M. Kubota, K. Shibuya, Y. Tokunaga, F. Kagawa, A. Tsukazaki, Y. Tokura, M. Kawasaki
Journal of Magnetism and Magnetic Materials **339**, 63 (2013).
- 13) Magneto-photoluminescence of charged excitons from $Mg_xZn_{1-x}O/ZnO$ heterojunctions
T. Makino, Y. Segawa, A. Tsukazaki, R. Shen, S. Takeyama, H. Yuji, Y. Nishimoto, S. Akasaka, D. Takamizu, K. Nakahara, T. Tanabe, A. Kamisawa, M. Kawasaki
Physical Review B **87**, 085312 (2013).
- 14) Robust formation of skyrmions and topological Hall effect in epitaxial thin films of MnSi
Y. Li, N. Kanazawa, X. Z. Yu, A. Tsukazaki, M. Kawasaki, M. Ichikawa, X. F. Jin, F. Kagawa, Y. Tokura
Physical Review Letters **110**, 117202 (2013).

2012

- 15) Single-valley quantum Hall ferromagnet in a dilute $Mg_xZn_{1-x}O/ZnO$ strongly correlated two-dimensional electron system
Y. Kozuka, A. Tsukazaki, D. Maryenko, J. Falson, C. Bell, M. Kim, Y. Hikita, H. Y. Hwang, M. Kawasaki
Physical Review B **85**, 075302 (2012).
- 16) Temperature dependent magnetotransport experiments around $\nu = 1/2$ in ZnO heterostructures
D. Maryenko, J. Falson, Y. Kozuka, A. Tsukazaki, M. Onoda, H. Aoki, M. Kawasaki
Physical Review Letters **108**, 186803 (2012).
- 17) Ultrafast time-resolved Faraday rotation in EuO thin films
F. Liu, T. Makino, K. Ueno, A. Tsukazaki, T. Fukumura, Y. Kong, M. Kawasaki
Physical Review Letters **108**, 257401 (2012).
- 18) Precise calibration of Mg concentration in $Mg_xZn_{1-x}O$ thin films grown on ZnO substrates
Y. Kozuka, J. Falson, Y. Segawa, T. Makino, A. Tsukazaki, M. Kawasaki
Journal of Applied Physics **112**, 043515 (2012).
- 19) Gate control of surface transport in MBE-grown topological insulator $(Bi_{1-x}Sb_x)_2Te_3$ thin films
S. Simizu, R. Yoshimi, T. Hatano, K. S. Takahashi, A. Tsukazaki, M. Kawasaki, Y. Iwasa, Y. Tokura
Physical Review B **86**, 045319 (2012).
- 20) Ultrafast optical control of magnetization in EuO thin films
T. Makino, F. Liu, T. Yamasaki, Y. Kozuka, K. Ueno, A. Tsukazaki, T. Fukumura, Y. Kong, M. Kawasaki
Physical Review B **86**, 064403 (2012).
- 21) Stress-induced perpendicular magnetization in epitaxial Iron garnet thin films
M. Kubota, A. Tsukazaki, F. Kagawa, K. Shibuya, Y. Tokunaga, M. Kawasaki, Y. Tokura
Applied Physics Express **5**, 103002 (2012).
- 22) Correlation enhanced effective mass of two-dimensional electrons in $Mg_xZn_{1-x}O/ZnO$ heterostructures
Y. Kasahara, Y. Oshima, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki, Y. Iwasa
Physical Review Letters **109**, 246401 (2012).

2011

- 23) Magnesium doping controlled density and mobility of two-dimensional electron gas in $Mg_xZn_{1-x}O/ZnO$ heterostructures
J. Falson, D. Maryenko, Y. Kozuka, A. Tsukazaki, M. Kawasaki
Applied Physics Express **4**, 091101 (2011).
- 24) Improvement of electron mobility above $100,000 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ in $Mg_xZn_{1-x}O/ZnO$ heterostructures
S. Akasaka, A. Tsukazaki, K. Nakahara, A. Ohtomo, M. Kawasaki
Japanese Journal of Applied Physics Letters **50**, 080215 (2011).
- 25) Insulating phase of a two-dimensional electron gas in $Mg_xZn_{1-x}O/ZnO$ heterostructures below $\nu = 1/3$

- Y. Kozuka, A. Tsukazaki, D. Maryenko, J. Falson, S. Akasaka, K. Nakahara, S. Nakamura, S. Awaji, K. Ueno, M. Kawasaki
Physical Review B **84**, 033304 (2011).
- 26) Pulsed laser deposition and ionic liquid gate control of epitaxial Bi₂Se₃ thin films
Y. Onose, R. Yoshimi, A. Tsukazaki, H. Y. Yuan, T. Hidaka, Y. Iwasa, M. Kawasaki, Y. Tokura
Applied Physics Express **4**, 083001 (2011).
- 27) Analysis of the nonlinear optical parameter of ZnO channel waveguides
E. Y. M. Teraoka, T. Kita, D. H. Broaddus, A. Tsukazaki, M. Kawasaki, A. L. Gaeta, H. Yamada
Japanese Journal of Applied Physics Letters **50**, 04DG01 (2011).
- 28) Observation of anomalous Hall effect in EuO epitaxial thin films grown by a pulse laser deposition
T. Yamasaki, K. Ueno, A. Tsukazaki, T. Fukumura, M. Kawasaki
Applied Physics Letters **98**, 082116 (2011).
- 29) Preparation of epitaxy-ready surface of a ZnO (0001) substrate
S. Akasaka, K. Nakahara, H. Yuji, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Applied Physics Express **4**, 035701 (2011).
- 2010**
- 30) Observation of the fractional quantum Hall effect in an oxide
A. Tsukazaki, S. Akasaka, K. Nakahara, Y. Ohno, H. Ohno, D. Maryenko, A. Ohtomo, M. Kawasaki
Nature Materials **9**, 889 (2010).
- 31) Self-phase modulation at visible wavelengths in nonlinear ZnO channel waveguides
E. Y. M. Teraoka, D. H. Broaddus, T. Kita, A. Tsukazaki, M. Kawasaki, A. L. Gaeta, H. Yamada
Applied Physics Letters **97**, 071105 (2010).
- 32) Mg_xZn_{1-x}O films with a low residual donor concentration ($< 10^{15} \text{ cm}^{-3}$) grown by molecular beam epitaxy
S. Akasaka, K. Nakahara, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Applied Physics Express **3**, 071101 (2010).
- 33) Nitrogen doped Mg_xZn_{1-x}O/ZnO single heterostructure ultraviolet light-emitting diodes on ZnO substrate
K. Nakahara, S. Akasaka, H. Yuji, K. Tamura, T. Fujii, Y. Nishimoto, D. Takamizu, A. Sasaki, T. Tanabe, H. Takasu, H. Amaike, T. Onuma, S. F. Chichibu, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Applied Physics Letters **97**, 013501 (2010).
- 34) Epitaxial growth of ZnO and Mg_xZn_{1-x}O films on Zn-polar ZnO substrates by molecular beam epitaxy
H. Yuji, K. Nakahara, K. Tamura, S. Akasaka, Y. Nishimoto, D. Takamizu, A. Sasaki, T. Tanabe, H. Takasu, T. Onuma, S. F. Chichibu, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Japanese Journal of Applied Physics **49**, 071104 (2010).
- 35) Hydrogenation-induced surface polarity recognition and proton memory behavior at protic-ionic-liquid/oxide electric-double-layer interface
H. Yuan, H. Shimotani, A. Tsukazaki, A. Ohtomo, M. Kawasaki, Y. Iwasa
Journal of the American Chemical Society **132**, 6672-6678 (2010).
- 36) ZnO channel waveguides for nonlinear optical applications
E. Y. M. Teraoka, T. Kita, A. Tsukazaki, M. Kawasaki, Y. Ohtera, H. Yamada
Japanese Journal of Applied Physics, **49**, 04DG15 (2010).
- 37) Electric-field control of two-dimensional electrons in polymer-gated oxide semiconductor heterostructures
M. Nakano, A. Tsukazaki, A. Ohtomo, K. Ueno, S. Akasaka, H. Yuji, K. Nakahara, T. Fukumura, M. Kawasaki
Advanced Materials **22**, 876 (2010).
- 38) Spatial distribution of two-dimensional electron gas in a ZnO/Mg_{0.2}Zn_{0.8}O heterostructure probed by a conducting Schottky contact

M. Nakano, A. Tsukazaki, K. Ueno, R. Y. Gunji, A. Ohtomo, T. Fukumura, M. Kawasaki
Applied Physics Letters **96**, 052116 (2010).

2009

- 39) Magneto-optical study of *n*-type modulation-doped ZnO/Mg_xZn_{1-x}O single quantum well structures
T. Makino, Y. Furuta, Y. Segawa, A. Tsukazaki, A. Ohtomo, Y. Hirayama, R. Shen, S. Takeyama, Y. Takagi, M. Kawasaki
Physical Review B **80**, 155333 (2009).
- 40) High-density carrier accumulation in ZnO field-effect transistors gated by electric double layers of ionic liquid
H. Yuan, H. Shimotani, A. Tsukazaki, A. Ohtomo, M. Kawasaki, Y. Iwasa
Advanced Functional Materials **19**, 1046-1053 (2009).

2008

- 41) Low temperature field-effect and magnetotransport properties in a ZnO based heterostructure with atomic-layer-deposited gate dielectric
A. Tsukazaki, A. Ohtomo, D. Chiba, Y. Ohno, H. Ohno, M. Kawasaki
Applied Physics Letters **93**, 241905 (2008).
- 42) Spin susceptibility and effective mass of two-dimensional electrons in Mg_xZn_{1-x}O/ZnO heterostructures
A. Tsukazaki, A. Ohtomo, M. Kawasaki, S. Akasaka, H. Yuji, K. Tamura, K. Nakahara, T. Tanabe, A. Kamisawa, T. Gokmen, J. Shavani, M. Shayegan
Physical Review B **78**, 233308 (2008).
- 43) Mg_xZn_{1-x}O-based Schottky Photodiode for highly color-selective ultraviolet light detection
M. Nakano, T. Makino, A. Tsukazaki, K. Ueno, A. Ohtomo, T. Fukumura, H. Yuji, Y. Nishimoto, S. Akasaka, D. Takamizu, K. Nakahara, T. Tanabe, A. Kamisawa, M. Kawasaki
Applied Physics Express **1**, 121201 (2008).
- 44) Transparent polymer Schottky contact for a high performance visible-blind ultraviolet photodiode based on ZnO
M. Nakano, T. Makino, A. Tsukazaki, K. Ueno, A. Ohtomo, T. Fukumura, H. Yuji, S. Akasaka, K. Tamura, K. Nakahara, T. Tanabe, A. Kamisawa, M. Kawasaki
Applied Physics Letters **93**, 123309 (2008).
- 45) Photoexcitation screening of the built-in electric field in ZnO single quantum wells
T. Makino, Y. Segawa, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Applied Physics Letters **93**, 121907 (2008).
- 46) Plasma-assisted molecular beam epitaxy of high optical quality MgZnO films on Zn-polar ZnO substrates
Y. Nishimoto, K. Nakahara, D. Takamizu, A. Sasaki, K. Tamura, S. Akasaka, H. Yuji, T. Fujii, T. Tanabe, H. Takasu, A. Tsukazaki, A. Ohtomo, T. Onuma, S. F. Chichibu, M. Kawasaki
Applied Physics Express **1**, 091202 (2008).
- 47) Polymer Schottky contact on O-polar ZnO with silane coupling agent as surface protective layer
R. Y. Gunji, M. Nakano, A. Tsukazaki, A. Ohtomo, T. Fukumura, M. Kawasaki
Applied Physics Letters **93**, 012104 (2008).
- 48) High electron mobility exceeding 10⁴ cm²V⁻¹s⁻¹ in MgZnO/ZnO single heterostructures grown by molecular-beam epitaxy
A. Tsukazaki, H. Yuji, S. Akasaka, K. Tamura, K. Nakahara, T. Tanabe, H. Takasu, A. Ohtomo, M. Kawasaki
Applied Physics Express **1**, 055004 (2008).
- 49) Photoinduced insulator-to-metal transition in ZnO/Mg_{0.15}Zn_{0.85}O heterostructures
A. Tsukazaki, A. Ohtomo, M. Nakano, M. Kawasaki
Applied Physics Letters **92**, 052105 (2008).

2007

- 50) Low temperature growth of highly crystalline superconducting ZrN thin film on c-GaN layer by pulsed laser deposition method
Y. Zhu, M. Ikeda, Y. Murakami, A. Tsukazaki, T. Fukumura, M. Kawasaki

Japanese Journal of Applied Physics **46**, L1000 (2007).

- 51) Schottky contact on a ZnO (0001) single crystal with conducting polymer
M. Nakano, A. Tsukazaki, R. Y. Gunji, K. Ueno, A. Ohtomo, T. Fukumura, M. Kawasaki
Applied Physics Letters **91**, 142113 (2007).
- 52) Insulator-to-Metal Transition in ZnO by Electric Double Layer Gating
H. Shimotani, H. Asanuma, A. Tsukazaki, A. Ohtomo, M. Kawasaki, Y. Iwasa
Applied Physics Letters **91**, 082106 (2007).
- 53) Recombination dynamics of excitons in Mg_{0.11}Zn_{0.89}O alloy films grown using the high-temperature-annealed self-buffer layer by laser-assisted molecular-beam epitaxy
M. Kubota, T. Onuma, A. Tsukazaki, A. Ohtomo, M. Kawasaki, T. Sota, S. F. Chichibu
Applied Physics Letters **90**, 141903 (2007).
- 54) Quantum Hall-effect in polar oxide heterostructures
A. Tsukazaki, A. Ohtomo, T. Kita, Y. Ohno, H. Ohno, M. Kawasaki
Science **315**, 1388 (2007).

2006

- 55) Analysis of time-resolved donor-acceptor photoluminescence of N-doped ZnO
T. Makino, A. Tsukazaki, A. Ohtomo, M. Kawasaki, H. Koinuma
Japanese the Physical Society of Japan **75**, 095001 (2006).
- 56) Hole transport in p-type ZnO
T. Makino, A. Tsukazaki, A. Ohtomo, M. Kawasaki, H. Koinuma
Japanese Journal of Applied Physics **45**, 6346 (2006).
- 57) Shifting Donor-acceptor photoluminescence in N-doped ZnO
T. Makino, A. Tsukazaki, A. Ohtomo, M. Kawasaki, H. Koinuma
Journal of the Physical Society of Japan **75**, 073701 (2006).
- 58) Improvements in quantum efficiency of excitonic emissions in ZnO epilayers by the elimination of point defects
S. F. Chichibu, T. Onuma, M. Kubota, A. Uedono, T. Sota, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Journal of Applied Physics **99**, 093505 (2006).
- 59) High-mobility electronic transport in ZnO thin films
A. Tsukazaki, A. Ohtomo, M. Kawasaki
Applied Physics Letters **88**, 152106 (2006).

2005

- 60) Free-carrier effects on zero- and one- phonon absorption onsets of n-type ZnO
T. Makino, Y. Segawa, S. Yoshida, A. Tsukazaki, A. Ohtomo, M. Kawasaki, H. Koinuma,
Japanese Journal of Applied Physics **44**, 7275 (2005).
- 61) Spectral shape analysis of ultraviolet luminescence in n-type ZnO:Ga
T. Makino, Y. Segawa, S. Yoshida, A. Tsukazaki, A. Ohtomo, M. Kawasaki, H. Koinuma,
Journal of Applied Physics **98**, 093520 (2005).
- 62) Electron transport in ZnO thin films
T. Makino, Y. Segawa, A. Tsukazaki, A. Ohtomo, M. Kawasaki
Applied Physics Letters **87**, 022101 (2005).
- 63) Blue light-emitting diode based on ZnO
A. Tsukazaki, M. Kubota, A. Ohtomo, T. Onuma, K. Ohtani, H. Ohno, S. F. Chichibu, M. Kawasaki
Japanese Journal of Applied Physics **44**, L643 (2005).
- 64) Exciton-polariton spectra and limiting factors for the room-temperature photoluminescence efficiency in ZnO

S. F. Chichibu, A. Uedono, A. Tsukazaki, T. Onuma, M. Zamfirescu, A. Ohtomo, A. Kavokin, G. Cantwell, C. W. Litton, T. Sota M. Kawasaki
Semiconductor Science and Technology **20**, S67 (2005).

65) Pulsed laser deposition of thin films and superlattices based on ZnO

A. Ohtomo, A. Tsukazaki

Semiconductor Science and Technology **20**, S1 (2005).

66) Repeated temperature modulation epitaxy for p-type doping and light-emitting diode based on ZnO

A. Tsukazaki, A. Ohtomo, T. Onuma, M. Ohtani, T. Makino, M. Sumiya, K. Ohtani, S. F. Chichibu, S. Fuke, Y. Segawa, H. Ohno, H. Koinuma, M. Kawasaki

Nature Materials **4**, 42 (2005).

2004

67) Hall and field-effect mobilities of electrons accumulated at a lattice-matched ZnO/ScAlMgO₄ heterointerface

T. I. Suzuki, A. Ohtomo, A. Tsukazaki, F. Satoh, J. Nishii, H. Ohno, M. Kawasaki

Advanced materials **16**(21), 1887 (2004).

68) Direct comparison of photoluminescence lifetime and defect densities in ZnO epilayers studied by time-resolved photoluminescence and slow positron annihilation techniques

T. Koida, A. Uedono, A. Tsukazaki, T. Sota, M. Kawasaki, S. F. Chichibu

Physica Status Solidi a **201**, 2841-2845 (2004).

69) Gallium concentration dependence of room-temperature near-band-edge luminescence in n-type ZnO:Ga

T. Makino, Y. Segawa, S. Yoshida, A. Tsukazaki, A. Ohtomo, M. Kawasaki

Applied Physics Letters **85**, 759 (2004).

70) Emission from the higher-order excitons in ZnO films grown by laser molecular-beam epitaxy

A. Tsukazaki, A. Ohtomo, M. Kawasaki, T. Makino, C.H. Chia, Y. Segawa, H. Koinuma

Applied Physics Letters **84**, 3858 (2004).

71) Epitaxial growth and physical properties of a room temperature ferromagnetic semiconductor: Anatase phase Ti_{1-x}Co_xO₂

Y. Yamada, H. Toyosaki, A. Tsukazaki, T. Fukumura, K. Tamura, Y. Segawa, K. Nakajima, T. Aoyama, T. Chikyow, T. Hasegawa, H. Koinuma, M. Kawasaki

Journal of Applied Physics **96**, 5097 (2004)

72) Radiative and nonradiative excitonic transitions in nonpolar (11-20) and polar (000-1) and (0001) ZnO epilayers

T. Koida, S. F. Chichibu, A. Uedono, T. Sota, A. Tsukazaki, M. Kawasaki

Applied Physics Letters **84**, 1079 (2004).

73) SIMS analysis of ZnO films co-doped with N and Ga by temperature gradient pulsed laser deposition

M. Sumiya, A. Tsukazaki, S. Fuke, A. Ohtomo, H. Koinuma, M. Kawasaki

Applied Surface Science **223**, 206 (2004).

2003

74) Layer-by-layer growth of high-optical-quality ZnO film on atomically smooth and lattice relaxed ZnO buffer layer.

A. Tsukazaki, A. Ohtomo, S. Yoshida, M. Kawasaki, C.H. Chia, T. Makino, Y. Segawa, T. Koida, S. F. Chichibu, H. Koinuma

Applied Physics Letters **83**, 2784 (2003).

75) Donor-acceptor pair luminescence in nitrogen-doped ZnO films grown on lattice-matched ScAlMgO₄(0001) substrates.

K. Tamura, T. Makino, A. Tsukazaki, M. Sumiya, S. Fuke, T. Furumochi, M. Lippmaa, C. H. Chia, Y. Segawa, H. Koinuma, M. Kawasaki

Solid State Communications **127**, 265 (2003).

76) Defects in ZnO thin films grown on ScAlMgO₄ substrates probed by a monoenergetic positron beam

A. Uedono, T. Koida, A. Tsukazaki, M. Kawasaki, Z. Q. Chen, S. F. Chichibu, H. Koinuma

Journal of Applied Physics **93**, 2481 (2003).

- 77) Quantitative control and detection of heterovalent impurities in ZnO thin films grown by pulsed laser deposition.
M. Sumiya, S. Fuke, [A. Tsukazaki](#), K. Tamura, A. Ohtomo, M. Kawasaki, H. Koinuma
Journal of Applied Physics **93**, 2562 (2003).
- 78) Magneto-optical spectroscopy of anatase TiO₂ doped with Co
T. Fukumura, Y. Yamada, K. Tamura, K. Nakajima, T. Aoyama, [A. Tsukazaki](#), M. Sumiya, S. Fuke, Y. Segawa, T. Chikyow, T. Hasegawa, H. Koinuma, M. Kawasaki
Japanese Journal of Applied Physics **42**, L105 (2003).
- 79) Correlation between the photoluminescence lifetime and defect density in bulk and epitaxial ZnO
T. Koida, S. F. Chichibu, A. Uedono, [A. Tsukazaki](#), M. Kawasaki, T. Sota, Y. Segawa, H. Koinuma
Applied Physics Letters **82**, 532 (2003).

2002

- 80) Systematic examination of carrier polarity in composition spread ZnO thin films codoped with Ga and N
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List of conference presentations: (only invited talks)

- 1) Transport properties of the surface states in (Bi_{1-x}Sb_x)₂Te₃ thin film devices
[A. Tsukazaki](#)
The Asia-Pacific Workshop on Strongly correlated system 2014 (APW-2014), Beijing, Oct. 10, 2014.
- 2) High mobility 2D transport in well-regulated ZnO based wurtzite heterostructures
[A. Tsukazaki](#)
MRS Fall meeting, Boston, USA, December 4, 2013.
- 3) Polar discontinuity effect in Wurtzite ZnO based heterostructures
[A. Tsukazaki](#)
JSAP-MRS symposia, Kyoto, September 19, 2013.
- 4) Interface engineering for high mobility 2DEG on polar-oxide semiconductors
[A. Tsukazaki](#)
The 40th international symposium on Compound Semiconductors, Kobe, May 23, 2013.
- 5) Quantum Hall effect in MgZnO/ZnO heterostructures
[A. Tsukazaki](#)
4th International Workshop on Emergent Phenomena in Quantum Hall Systems (EPQHS), Beijing, China, June 23-26, 2011.
- 6) Fractional quantum Hall effect at the MgZnO/ZnO heterointerfaces
[A. Tsukazaki](#)
38th International symposium on Compound Semiconductors (ISCS), Berlin, Germany, May 22-26, 2011.
- 7) Emergence of fractional quantum Hall states in well-regulated MgZnO/ZnO heterostructures
[A. Tsukazaki](#), Y. Kozuka, M. Kawasaki
MRS spring meeting, 2011 San Francisco, USA, April 27, 2011.

- 8) Fractional Quantum Hall effect in MgZnO/ZnO heterostructures
A. Tsukazaki, S. Akasaka, K. Nakahara, A. Kamisawa, Y. Ohno, H. Ohno, A. Ohtomo, M. Kawasaki
 The 2010 WPI-AIMR Annual Workshop, Sendai, March 25-27, 2010.
- 9) Observation of fractional quantum Hall effect in MgZnO/ZnO based heterostructures
A. Tsukazaki
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- 10) 2D electron transport in Mg_xZn_{1-x}O based heterostructures
A. Tsukazaki, A. Ohtomo, S. Akasaka, K. Nakahara, Y. Ohno, H. Ohno, M. Kawasaki,
 JSPS Core program meeting, Korea, Oct. 24, 2009.
- 11) Quantum transport at MgZnO/ZnO interface
A. Tsukazaki
 CNSI- RIEC Workshop on Nanoelectronics, Spintronics and Photonics, Santa Barbara, USA, Oct. 9-10, 2008.
- 12) Quantum transport phenomena in Mg_xZn_{1-x}O/ZnO heterointerface
A. Tsukazaki
 ATI international workshop, CREST international workshop, and Global COE international workshop on Spin currents,
 Japan, Feb. 19, 2008.
- 13) Atomically controlled heteroepitaxy of ZnO enabling UV emitting and quantum Hall devices
A. Tsukazaki, A. Ohtomo, M. Kawasaki
 The Minerals, Metals and Materials Society (TMS) 2008 Annual Meeting & Exhibition, Louisiana, USA, March 10, 2008.
- 14) Highly controlled epitaxy of ZnO for light emitting devices
A. Tsukazaki, A. Ohtomo, M. Kubota, T. Onuma, S. F. Chichibu, M. Sumiya, S. Fuke, T. Kita, K. Ohtani, Y. Ohno, H.
 Ohno, T. Makino, Y. Segawa, H. Koinuma, M. Kawasaki
 International Symposium on Advanced Ceramics, Singapore, Dec. 14, 2006.
- 15) Key materials aspects for valence control of ZnO
A. Tsukazaki
 American Physical Society March meeting, Baltimore, USA, 2006.
- 16) Blue light emitting diode based on ZnO
A. Tsukazaki, M. Kubota, A. Ohtomo, T. Onuma, K. Ohtani, H. Ohno, S. F. Chichibu, M. Kawasaki
 67th autumn meeting of Japan Society of Applied Physics, Japan, 2006.
- 17) Optical and electrical properties of ZnO films
A. Tsukazaki, A. Ohtomo, M. Kawasaki, M. Kubota, T. Onuma, S. F. Chichibu, M. Sumiya, S. Fuke, T. Kita, K. Ohtani, Y.
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 COE mini-workshop on "Strongly Correlated Electronics", Kashiwa, Jan. 14, 2006.
- 18) Advances in ZnO thin film growth by laser molecular beam epitaxy
A. Tsukazaki, A. Ohtomo, M. Kawasaki, M. Kubota, T. Onuma, S. F. Chichibu, M. Sumiya, S. Fuke, T. Kita, K. Ohtani, Y.
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 Materials Research Society Fall meeting, Boston, USA, 2005.
- 19) Layer-by-layer growth of nitrogen doped ZnO single crystalline films
A. Tsukazaki, A. Ohtomo, M. Kawasaki
 AFOSR ZnO workshop in Maui, USA, May 17, 2004.