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Professor

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#### 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) [指導教員 : 川崎雅司教授]

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 [指導教員 : 川崎雅司教授]

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 :

epitaxial thin film growth, molecular beam epitaxy, quantum transport, electric-field effect

oxide electronics, topological insulators,

#### 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)

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

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

2013.4~2024.3 東北大学金属材料研究所 低温物理学研究部門 教授

2024.4~ 現職

兼任

2008.10~2012.3 科学技術振興機構戦略的創造研究事業さきがけ 研究員

2012.10~2016.3 科学技術振興機構戦略的創造研究事業さきがけ 研究員

2013.4~2014.3 理化学研究所 創発物性科学研究センター強相関界面研究グループ 客員研究員

2014.4~ 理化学研究所 創発物性科学研究センター強相関界面研究グループ 客員主管研究員

2016.4~2017.9 科学技術振興機構 研究開発戦略センター(JST-CRDS) 特任フェロー

#### 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)

I, 18th JSPS Prize (2021)

## List of Publication

### 2024

- 228) Synthesis of a tailored semimetallic Weyl ferromagnet  
I. Belopolski, R. Watanabe, Y. Sato, R. Yoshimi, M. Kawamura, S. Nagahama, Y. Zhao, S. Shao, Y. Jin, Y. Kato, Y. Okamura, X-X. Zhang, Y. Fujishiro, Y. Takahashi, M. Hirschberger, **A. Tsukazaki**, K. S. Takahashi, C-K. Chiu, G. Chang, M. Kawasaki, N. Nagaosa, Y. Tokura  
Nature, accepted.
- 227) Parity-independent Kondo effect of correlated electrons in electrostatically defined ZnO quantum dots  
K. Noro, Y. Kozuka, K. Matsumura, T. Kumasaka, Y. Fujiwara, **A. Tsukazaki**, M. Kawasaki, T. Otsuka  
Nature Communications, accepted.
- 226) Strongly pinned skyrmionic bubbles and higher-order nonlinear Hall resistances at the interface of Pt/FeSi bilayer  
T. Hori, N. Kanazawa, K. Matsuura, H. Ishizuka, K. Fujiwara, **A. Tsukazaki**, M. Ichikawa, M. Kawasaki, F. Kagawa, M. Hirayama, Y. Tokura  
Physical Review Materials **8**, 044407 (2024).
- 225) Photogalvanic spectroscopy on MnBi<sub>2</sub>Te<sub>4</sub> topological insulator thin films  
T. Takagi, R. Watanabe, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura, N. Ogawa  
Applied Physics Letters **124**, 163102 (2024).
- 224) Molecular beam epitaxy of superconducting FeSe<sub>x</sub>Te<sub>1-x</sub> thin films interfaced with magnetic topological insulators  
Y. Sato, S. Nagahama, I. Belopolski, R. Yoshimi, M. Kawamura, **A. Tsukazaki**, N. Kanazawa, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review Materials **8**, L041801 (2024).
- 223) Terahertz field driven giant nonlinear phonon response in ferroelectric semiconductor In-doped (Sn,Pb)Te  
H. Handa, Y. Okamura, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, Y. Tokura, Y. Takahashi  
Physical Review B **109**, L081102 (2024).
- 222) Bipolarity of large anomalous Nernst effect in Weyl magnet-based alloy films  
S. Noguchi, K. Fujiwara, Y. Yanagi, M-T. Suzuki, T. Hirai, T. Seki, K. Uchida, **A. Tsukazaki**  
Nature Physics **20**, 254 (2024).

### 2023

- 221) Gate-electric-field and magnetic-field control of versatile topological phases in a semi-magnetic topological insulator  
R. Watanabe, R. Yoshimi, K. S. Takahashi, **A. Tsukazaki**, M. Kawasaki, M. Kawamura, Y. Tokura  
Applied Physics Letters **123**, 183102 (2023).
- 220) Variation of Landau level splitting in the Fermi level controlled Dirac metals (Eu,Gd)MnBi<sub>2</sub>  
H. Sakai, K. Nakagawa, K. Tsuruda, J. Shiogai, K. Akiba, M. Tokunaga, S. Kimura, S. Awaji, **A. Tsukazaki**, H. Murakawa, N. Hanasaki  
Physical Review B **108**, 115142 (2023).
- 219) Intercorrelated anomalous Hall and spin Hall effect in kagome-lattice Co<sub>3</sub>Sn<sub>2</sub>S<sub>2</sub>-based shandite films  
Y-C. Lau, J. Ikeda, K. Fujiwara, A. Ozawa, J. Zheng, T. Seki, K. Nomura, L. Du, Q. Wu, **A. Tsukazaki**, K. Takanashi  
Physical Review B **108**, 064429 (2023).
- 218) Berry curvature contributions of kagome-lattice fragments in amorphous Fe-Sn thin films  
K. Fujiwara, Y. Kato, H. Abe, S. Noguchi, J. Shiogai, Y. Niwa, H. Kumigashira, Y. Motome, **A. Tsukazaki**  
Nature Communications **14**, 3399 (2023).
- 217) Improvement of superconducting properties in La<sub>1-x</sub>Sr<sub>x</sub>NiO<sub>2</sub> thin films by tuning topochemical reduction temperature  
M. Osada, K. Fujiwara, T. Nojima, **A. Tsukazaki**  
Physical Review Materials **7**, L051801 (2023).
- 216) Enhancement of spin-charge conversion efficiency for Co<sub>3</sub>Sn<sub>2</sub>S<sub>2</sub> across transition from paramagnetic to

ferromagnetic phase

T. Seki, Y.-C. Lau, J. Ikeda, K. Fujiwara, A. Ozawa, S. Iihama, K. Nomura, **A. Tsukazaki**

Physical Review Research **5**, 013222 (2023).

- 215) Electrochemical thinning of Co kagome-lattice layers in ferromagnetic  $\text{Co}_3\text{Sn}_2\text{S}_2$  thin films by bias-induced Co dissolution

K. Fujiwara, J. Ikeda, S. Ito, **A. Tsukazaki**

Journal of Applied Physics **133**, 125302 (2023).

- 214) Composition tuning of Mg/Ir ratio and crystallization of a spinel-related structure in Mg-Ir-O films by pulsed-laser deposition

M. Negishi, K. Fujiwara, **A. Tsukazaki**

Thin Solid Films **769**, 139740 (2023).

- 213) Superconducting FeSe membrane synthesized by etching of water-soluble  $\text{Sr}_3\text{Al}_2\text{O}_6$  layer

J. Shiogai, **A. Tsukazaki**

Applied Physics Letters **122**, 052602 (2023).

- 212) Laughlin charge pumping in a quantum anomalous Hall insulator

M. Kawamura, M. Mogi, R. Yoshimi, T. Morimoto, K. S. Takahashi, **A. Tsukazaki**, N. Nagaosa, M. Kawasaki, Y. Tokura

Nature Physics **19**, 333 (2023).

- 211) A Noble-Metal-Free Spintronic System with Proximity-Enhanced Ferromagnetic Topological Surface State of FeSi above Room Temperature

T. Hori, N. Kanazawa, M. Hirayama, K. Fujiwara, **A. Tsukazaki**, M. Ichikawa, M. Kawasaki, Y. Tokura

Advanced Materials **35**, 2206801(2023).

## 2022

- 210) Non-volatile chirality switching by all-optical magnetization reversal in ferromagnetic Weyl semimetal  $\text{Co}_3\text{Sn}_2\text{S}_2$

N. Yoshikawa, K. Ogawa, Y. Hirai, K. Fujiwara, J. Ikeda, **A. Tsukazaki**, R. Shimano

Communications Physics **5**, 328 (2022).

- 208) Electrical detection of domain evolution in magnetic Weyl semi  $\text{Co}_3\text{Sn}_2\text{S}_2$  sub-micron-wide wire devices

J. Shiogai, J. Ikeda, K. Fujiwara, T. Seki, K. Takanashi, **A. Tsukazaki**

Physical Review Materials **6**, 114203 (2022).

- 208) Nonreciprocal charge transport in topological superconductor candidate  $\text{Bi}_2\text{Te}_3/\text{PdTe}_2$  heterostructure

M. Masuko, M. Kawamura, R. Yoshimi, M. Hirayama, Y. Ikeda, R. Watanabe, J. J. He, D. Maryenko, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, N. Nagaosa, Y. Tokura

npj Quantum Materials **7**, 104 (2022).

- 207) Nonreciprocal electrical transport in the multiferroic semiconductor  $(\text{Ge}, \text{Mn})\text{Te}$

R. Yoshimi, M. Kawamura, K. Yasuda, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura

Physical Review B **106**, 115202 (2022).

- 206) Terahertz lattice and charge dynamics in ferroelectric semiconductor  $\text{Sn}_x\text{Pb}_{1-x}\text{Te}$

Y. Okamura, H. Handa, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura, Y. Takahashi

npj Quantum Materials **7**, 91 (2022).

- 205) A large unidirectional magnetoresistance in Fe-Sn heterostructure devices

J. Shiogai, K. Fujiwara, T. Nojima, **A. Tsukazaki**

Japanese Journal of Applied Physics **61**, 083001 (2022).

- 204) Optical anomalous Hall effect enhanced by flat bands in ferromagnetic van der Waals semimetal

Y. D. Kato, Y. Okamura, S. Minami, R. Fujimura, M. Mogi, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, R. Arita, Y. Tokura, Y. Takahashi

npj Quantum Materials **7**, 73 (2022).

- 203)  $L2_1$  ordering of  $\text{Co}_2\text{FeSn}$  thin films promoted by high-temperature annealing

K. Fujiwara, K. Shibata, S. Nishimura, J. Shiogai, **A. Tsukazaki**

AIP Advances **12**, 065030 (2022).

- 202) Improvement of the detectivity in an Fe-Sn magnetic-field sensor with a large current injection

J. Shiogai, Z. Jin, Y. Satake, K. Fujiwara, **A. Tsukazaki**

Japanese Journal of Applied Physics **61**, SC1069 (2022).

- 201) Experimental signature of the parity anomaly in a semi-magnetic topological insulator  
M. Mogi, Y. Okamura, M. Kawamura, R. Yoshimi, K. Yasuda, **A. Tsukazaki**, K.S. Takahashi, T. Morimoto, N. Nagaosa, M. Kawasaki, Y. Takahashi, Y. Tokura  
Nature Physics **18**, 390 (2022).
- 200) Enhancement of anomalous Hall effect in epitaxial thin films of intrinsic magnetic topological insulator  $\text{Mn}(\text{Bi}_{1-x}\text{Sb}_x)_2\text{Te}_4$  with Fermi-level tuning  
R. Watanabe, R. Yoshimi, M. Kawamura, Y. Kaneko, K. S. Takahashi, **A. Tsukazaki**, M. Kawasaki, Y. Tokura  
Applied Physics Letters **120**, 031901 (2022).
- 199) Competing correlated states around the zero field Wigner crystallization transition of electrons in two-dimensions  
J. Falson, I. Sodemann, B. Skinner, D. Tabrea, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki, K. von Klitzing, J. H. Smet  
Nature Materials **21**, 311 (2022).
- 198) Quantum anomalous Hall effect with a permanent magnet defines a quantum resistance standard  
Y. Okazaki, T. Oe, M. Kawamura, R. Yoshimi, S. Nakamura, S. Takada, M. Mogi, K. S. Takahashi, **A. Tsukazaki**, M. Kawasaki, Y. Tokura, N-H. Kaneko  
Nature Physics **18**, 25 (2022).

## 2021

- 197) Formation of ilmenite-type single-crystalline  $\text{MgTiO}_3$  thin films by pulsed-laser deposition  
M. Negishi, K. Fujiwara, **A. Tsukazaki**  
AIP Advances **11**, 125125 (2021).
- 196) Emergence of spin-orbit coupled ferromagnetic surface state derived from Zak phase in a nonmagnetic insulator FeSi  
Y. Ohtsuka, N. Kanazawa, M. Hirayama, A. Matsui, T. Nomoto, R. Arita, T. Nakajima, T. Hanashima, V. Ukleev, H. Aoki, M. Mogi, K. Fujiwara, **A. Tsukazaki**, M. Ichikawa, M. Kawasaki, Y. Tokura  
Science Advances **7**, eabj0498 (2021).
- 195) Tuning scalar spin chirality in ultrathin films of the kagome-lattice ferromagnet  $\text{Fe}_3\text{Sn}$   
K. Fujiwara, Y. Kato, T. Seki, K. Nomura, K. Takanashi, Y. Motome, **A. Tsukazaki**  
Communications Materials **2**, 113 (2021).
- 194) Magneto-optical spectroscopy on Weyl nodes for anomalous and topological Hall effects in chiral MnGe  
Y. Hayashi, Y. Okamura, N. Kanazawa, T. Yu, T. Koretsune, R. Arita, **A. Tsukazaki**, M. Ichikawa, M. Kawasaki, Y. Tokura, Y. Takahashi  
Nature Communications **12**, 5974 (2021).
- 193) Nonreciprocal transport in a Rashba Ferromagnet, Delafossite  $\text{PdCoO}_2$   
J. H. Lee, T. Harada, F. Trier, L. Marcano, F. Godel, S. Valencia, **A. Tsukazaki**, M. Bibes  
Nano Letters **21**, 20 (2021).
- 192) Three-dimensional sensing of the magnetic-field vector by a compact planar-type Hall device  
J. Shiogai, K. Fujiwara, T. Nojima, **A. Tsukazaki**  
Communications Materials **2**, 102 (2021).
- 191) Versatile electronic states epitaxial thin films of  $(\text{Sn-Pb-In})\text{Te}$ : From topological crystalline insulator and polar semimetal to superconductor  
R. Yoshimi, M. Masuko, N. Ogawa, M. Kawamura, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review Materials **5**, 094202 (2021).
- 190) Current-induced magnetization switching at charge-transferred interface between topological insulator  $(\text{Bi,Sb})_2\text{Te}_3$  and van der Waals ferromagnet  $\text{Fe}_3\text{GeTe}_2$   
R. Fujimura, R. Yoshimi, M. Mogi, **A. Tsukazaki**, M. Kawamura, K.S. Takahashi, M. Kawasaki, Y. Tokura  
Applied Physics Letters **119**, 032402 (2021). Selected as a featured article.
- 189) Two-dimensionality of metallic surface conduction in  $\text{Co}_3\text{Sn}_2\text{S}_2$  thin films  
J. Ikeda, K. Fujiwara, J. Shiogai, T. Seki, K. Nomura, K. Takanashi, **A. Tsukazaki**  
Communications Physics **4**, 117 (2021).
- 188) First-principles investigation of magnetic and transport properties in hole-doped Shandite compounds  $\text{Co}_3\text{In}_x\text{Sn}_{2-x}\text{S}_2$

Y. Yanagi, J. Ikeda, K. Fujiwara, K. Nomura, [A. Tsukazaki](#), M-T. Suzuki

Physical Review B **103**, 205112 (2021).

- 187) Current-induced switching of proximity-induced ferromagnetic surface states in a topological insulator  
M. Mogi, K. Yasuda, R. Fujimura, R. Yoshimi, N. Ogawa, [A. Tsukazaki](#), M. Kawamura, K.S. Takahashi, M. Kawasaki, Y. Tokura  
Nature Communications **12**, 1404 (2021).
- 186) Critical thickness for the emergence of Weyl features in  $\text{Co}_3\text{Sn}_2\text{S}_2$  thin films  
J. Ikeda, K. Fujiwara, J. Shiogai, T. Seki, K. Nomura, K. Takanashi, [A. Tsukazaki](#)  
Communications Materials **2**, 18 (2021).
- 185) Robustness perpendicular magnetic anisotropy of  $\text{Co}_3\text{Sn}_2\text{S}_2$  phase in sulfur deficient sputtered thin films  
J. Shiogai, J. Ikeda, K. Fujiwara, T. Seki, K. Takanashi, [A. Tsukazaki](#)  
Physical Review Materials **5**, 024403 (2021).
- 184) Determination of the phase coherence length of  $\text{PdCoO}_2$  nanostructures by conductance fluctuation analysis  
T. Harada, P. Bredol, H. Inoue, S. Ito, J. Mannhart, [A. Tsukazaki](#)  
Physical Review B **103**, 045123 (2021).
- 183) Giant anomalous Hall effect from spin-chirality scattering in a chiral magnet  
Y. Fujishiro, N. Kanazawa, R. Kurihara, H. Ishizuka, T. Hori, F. S. Yasin, X. Yu, [A. Tsukazaki](#), M. Ichikawa, M. Kawasaki, N. Nagaosa, M. Tokunaga, Y. Tokura  
Nature Communications **12**, 317 (2021).

## 2020

- 182) Single-domain formation of  $\text{SrMnBi}_2$  films on polar  $\text{LaAlO}_3$  substrate  
K. Takahashi, J. Shiogai, H. Inoue, S. Ito, S. Kimura, S. Awaji, [A. Tsukazaki](#)  
AIP Advances **10**, 105216 (2020).
- 181) Molecular beam epitaxy of superconducting  $\text{Sn}_{1-x}\text{In}_x\text{Te}$  thin films  
M. Masuko, R. Yoshimi, [A. Tsukazaki](#), M. Kawamura, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review Materials **4**, 091202(R) (2020).
- 180) Direct observation of the statics and dynamics of emergent magnetic monopoles in a chiral magnet  
N. Kanazawa, A. Kitaori, J. S. White, V. Ukleev, H. M. Ronnow, [A. Tsukazaki](#), M. Ichikawa, M. Kawasaki, Y. Tokura  
Physical Review Letters **125**, 137202 (2020).
- 179) Microwave response of interacting oxide two-dimensional electron systems  
D. Tabrea, I. A. Dmitriev, S. I. Dorozhkin, B. P. Gorshunov, A. V. Boris, Y. Kozuka, [A. Tsukazaki](#), M. Kawasaki, K. von Klitzing, J. Falson  
Physical Review B **102**, 115432 (2020).
- 178) Giant magneto-optical responses in magnetic Weyl semimetal  $\text{Co}_3\text{Sn}_2\text{S}_2$   
Y. Okamura, S. Minami, Y. Kato, Y. Fujishiro, Y. Kaneko, J. Ikeda, J. Muramoto, R. Kaneko, K. Ueda, V. Kocsis, N. Kanazawa, Y. Taguchi, T. Koretsune, K. Fujiwara, [A. Tsukazaki](#), R. Arita, Y. Tokura, Y. Takahashi  
Nature Communications **11**, 4619 (2020).
- 177) Stabilization of a honeycomb lattice of  $\text{IrO}_6$  octahedra by formation of ilmenite-type superlattices in  $\text{MnTiO}_3$   
K. Miura, K. Fujiwara, K. Nakayama, R. Ishikawa, N. Shibata, [A. Tsukazaki](#)  
Communications Materials **1**, 55 (2020).
- 176) Current scaling of the topological quantum phase transition between a quantum anomalous Hall insulator and a trivial insulator  
M. Kawamura, M. Mogi, R. Yoshimi, [A. Tsukazaki](#), Y. Kozuka, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review B **102**, 041301(R) (2020). Rapid communication.
- 175) Inhomogeneous interface dipole effect at the Schottky junctions of  $\text{PdCrO}_2$  on  $\beta\text{-Ga}_2\text{O}_3$  (201) substrates  
T. Miyakawa, T. Harada, S. Ito, [A. Tsukazaki](#)  
Journal of Applied Physics **128**, 025302 (2020).
- 174) Large non-reciprocal charge transport mediated by quantum anomalous Hall edge states  
K. Yasuda, T. Morimoto, R. Yoshimi, M. Mogi, [A. Tsukazaki](#), M. Kawamura, K. S. Takahashi, M. Kawasaki, N.

Nagaosa, Y. Tokura

Nature Nanotechnology **15**, 831 (2020).

- 173) Insulator-to-metal transition of  $\text{Cr}_2\text{O}_3$  thin films via isovalent  $\text{Ru}^{3+}$  substitution  
K. Fujiwara, M. Kitamura, D. Shiga, Y. Niwa, K. Horiba, T. Nojima, H. Ohta, H. Kumigashira, **A. Tsukazaki**  
Chemistry of Materials **32**, 5272-5279 (2020).
- 172) Dynamic characteristics of  $\text{PdCoO}_2 / \beta\text{-Ga}_2\text{O}_3$  Schottky junctions  
T. Harada, **A. Tsukazaki**  
Applied Physics Letters **116**, 232104 (2020).
- 171) Two-dimensional growth of conductive ultra-thin Sn films on insulating substrate with an Fe buffer layer  
D. Zheng, J. Shiogai, H. Inoue, S. Souma, T. Sato, **A. Tsukazaki**  
APL Materials **8**, 061103 (2020).
- 170) Magnetic-field-induced topological phase transition in Fe-doped  $(\text{Bi,Sb})_2\text{Se}_3$  heterostructures  
Y. Satake, J. Shiogai, G. P. Mazur, S. Kimura, S. Awaji, K. Fujiwara, T. Nojima, K. Nomura, S. Souma, T. Sato, T. Dietl, **A. Tsukazaki**  
Physical Review Materials **4**, 044202 (2020). Selected as Editor's suggestion.
- 169) Control of Schottky barrier height in metal/ $\beta\text{-Ga}_2\text{O}_3$  junctions by insertion of  $\text{PdCoO}_2$  layers  
T. Harada, **A. Tsukazaki**  
APL Materials **8**, 041109 (2020). Selected as a featured article.
- 168) Precise resistance measurement of quantum anomalous Hall effect in magnetic heterostructure film of topological insulator  
Y. Okazaki, T. Oe, M. Kawamura, R. Yoshimi, S. Nakamura, S. Takeda, M. Mogi, K. S. Takahashi, **A. Tsukazaki**, M. Kawasaki, Y. Tokura, N-H. Kaneko  
Applied Physics Letters **116**, 143101 (2020). Selected as a featured article.
- 167) Signature of band inversion in the perovskite thin-film alloy  $\text{BaSn}_{1-x}\text{Pb}_x\text{O}_3$   
J. Shiogai, T. Chida, K. Hashimoto, K. Fujiwara, T. Sasaki, **A. Tsukazaki**  
Physical Review B **101**, 125125 (2020).
- 166) Electrical detection of the antiferromagnetic transition in  $\text{MnTiO}_3$  ultrathin films by spin Hall magnetoresistance  
K. Miura, K. Fujiwara, J. Shiogai, T. Nojima, **A. Tsukazaki**  
Journal of Applied Physics **127**, 103903 (2020).
- 165) Anomalous Hall effect at the spontaneously electron-doped polar surface of  $\text{PdCoO}_2$  ultrathin films  
T. Harada, K. Sugawara, K. Fujiwara, M. Kitamura, T. Nojima, K. Horiba, H. Kumigashira, T. Takahashi, T. Sato, **A. Tsukazaki**  
Physical Review Research **2**, 013282 (2020).
- 164) A platform for making and transferring oxide films  
**A. Tsukazaki**  
Nature News&Views **578**, 41 (2020).

## 2019

- 163) Ordering phenomena of spin trimers accompanied by a large geometrical Hall effect  
S. Gao, M. Hirschberger, O. Zaharko, T. Nakajima, T. Kurumaji, A. Kikkawa, J. Shiogai, **A. Tsukazaki**, S. Kimura, S. Awaji, Y. Taguchi, T. Arima, Y. Tokura  
Physical Review B **100**, 241115(R) (2019).
- 162) Doping-induced enhancement of anomalous Hall coefficient in Fe-Sn nanocrystalline films for highly sensitive Hall sensors  
K. Fujiwara, Y. Satake, J. Shiogai, **A. Tsukazaki**  
APL Materials **7**, 111103 (2019).
- 161) Low-frequency noise measurements on Fe-Sn Hall sensors  
J. Shiogai, Z. Jin, Y. Satake, K. Fujiwara, **A. Tsukazaki**  
Applied Physics Express **12**, 123001 (2019).
- 160) Electric dipole effect in  $\text{PdCoO}_2 / \beta\text{-Ga}_2\text{O}_3$  Schottky diodes for high-temperature operation  
T. Harada, S. Ito, **A. Tsukazaki**

Science Advances **5**, eaax5733 (2019).

- 159) Ballistic transport in periodically modulated MgZnO/ZnO two-dimensional electron systems  
K. Tanaka, J. Falson, Y. Kozuka, M. Uchida, D. Maryenko, J. T. Ye, Y. Iwasa, **A. Tsukazaki**, J. H. Smet, M. Kawasaki  
Applied Physics Letters **115**, 153101 (2019). Selected as an Editor's Pick.
- 158) Quantum anomalous Hall effect driven by magnetic proximity coupling in all-telluride based heterostructure  
R. Watanabe, R. Yoshimi, M. Kawamura, M. Mogi, **A. Tsukazaki**, X. Z. Yu, K. Nakajima, K.S. Takahashi, M. Kawasaki, Y. Tokura  
Applied Physics Letters **115**, 102403 (2019).
- 157) Large anomalous Hall effect in topological insulators with proximitized ferromagnetic insulators  
M. Mogi, T. Nakajima, V. Ukleev, **A. Tsukazaki**, R. Yoshimi, M. Kawamura, K.S. Takahashi, T. Hanashima, K. Kakurai, T. Arima, M. Kawasaki, Y. Tokura  
Physical Review Letters **123**, 016804 (2019).
- 156) Nonreciprocal charge transport at topological insulator/superconductor interface  
K. Yasuda, H. Yasuda, R. Yoshimi, T. Liang, **A. Tsukazaki**, K. S. Takahashi, N. Nagaosa, M. Kawasaki, Y. Tokura  
Nature Communications **10**, 2734 (2019). <https://doi.org/10.1038/s41467-019-10658-3>
- 155) Ferromagnetic Co<sub>3</sub>Sn<sub>2</sub>S<sub>2</sub> thin films fabricated by co-sputtering  
K. Fujiwara, J. Ikeda, J. Shiogai, T. Seki, K. Takanashi, **A. Tsukazaki**  
Japanese Journal of Applied Physics Rapid Communications **58**, 050912 (2019).
- 154) Quantized conductance of one-dimensional strongly correlated electrons in an oxide heterostructure  
H. Hou, Y. Kozuka, J-W. Liao, L. W. Smith, D. Kos, J. P. Griffiths, J. Falson, **A. Tsukazaki**, M. Kawasaki, C. J. B. Ford  
Physical Review B **99**, 121302(R) (2019).
- 153) Growth control of corundum-derivative MnSnO<sub>3</sub> thin films by pulsed-laser deposition  
K. Miura, K. Fujiwara, **A. Tsukazaki**  
AIP Advances **9**, 035210 (2019).
- 152) Fe-Sn nanocrystalline films for flexible magnetic sensors with high temperature stability  
Y. Satake, K. Fujiwara, J. Shiogai, T. Seki, **A. Tsukazaki**  
Scientific Reports **9**, 3282 (2019).
- 151) Formation of distorted rutile-type NbO<sub>2</sub>, MoO<sub>2</sub>, and WO<sub>2</sub> films by reactive sputtering  
K. Fujiwara, **A. Tsukazaki**  
Journal of Applied Physics **125**, 085301 (2019).
- 150) Giant thermoelectric power factor in ultrathin FeSe superconductor  
S. Shimizu, J. Shiogai, N. Takemori, S. Sakai, H. Ikeda, R. Arita, T. Nojima, **A. Tsukazaki**, Y. Iwasa  
Nature Communications **10**, 825 (2019). <https://doi.org/10.1038/s41467-019-08784-z>
- 149) Magnetic topological insulators  
Y. Tokura, K. Yasuda, **A. Tsukazaki**  
Nature Reviews Physics **1**, 126-143 (2019).
- 148) Thin-film stabilization of LiNbO<sub>3</sub>-type ZnSnO<sub>3</sub> and MgSnO<sub>3</sub> by molecular-beam epitaxy  
K. Fujiwara, H. Minato, J. Shiogai, A. Kumamoto, N. Shibata, **A. Tsukazaki**  
APL Materials **7**, 022505 (2019).

## 2018

- 147) Pulsed-laser deposition of InSe thin films for the detection of thickness-dependent bandgap modification  
D. Zheng, J. Shiogai, K. Fujiwara, **A. Tsukazaki**  
Applied Physics Letters **113**, 253501 (2018).
- 146) Current-driven magnetization switching in ferromagnetic bulk Rashba semiconductor (Ge,Mn)Te  
R. Yoshimi, K. Yasuda, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Science Advances **4**, eaat9989 (2018).
- 145) Andreev reflection at the interface with an oxide in the quantum Hall regime  
Y. Kozuka, A. Sakaguchi, J. Falson, **A. Tsukazaki**, M. Kawasaki

Journal of the Physical Society of Japan **87**, 124712 (2018).

- 144) Emergence of interfacial conduction and ferromagnetism in MnTe/InP  
R. Watanabe, R. Yoshimi, M. Shirai, T. Tanigaki, M. Kawamura, **A. Tsukazaki**, K. S. Takahashi, R. Arita, M. Kawasaki, Y. Tokura  
Applied Physics Letters **113**, 181602 (2018).
- 143) Topological quantum phase transition in magnetic topological insulator upon magnetization rotation  
M. Kawamura, M. Mogi, R. Yoshimi, **A. Tsukazaki**, Y. Kozuka, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review B **98**, 140404(R) (2018). Rapid communication.
- 142) Ferromagnetic insulator Cr<sub>2</sub>Ge<sub>2</sub>Te<sub>6</sub> thin films with perpendicular remanence  
M. Mogi, **A. Tsukazaki**, Y. Kaneko, R. Yoshimi, K. S. Takahashi, M. Kawasaki, Y. Tokura  
APL Materials **6**, 091104 (2018). Selected as a featured article.
- 141) Effect of the depletion region in topological insulator heterostructures for ambipolar field-effect transistors  
Y. Satake, J. Shiogai, K. Fujiwara, **A. Tsukazaki**  
Physical Review B **98**, 125415 (2018).
- 140) A cascade of phase transitions in an orbitally mixed half-filled Landau level  
J. Falson, D. Tabrea, D. Zhang, I. Sodemann, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki, K. von Klitzing, J. H. Smet  
Science Advances **4**, eaat8742 (2018).
- 139) Anisotropy of the upper critical field and its thickness dependence in superconducting FeSe electric double layer transistors  
J. Shiogai, S. Kimura, S. Awaji, T. Nojima, **A. Tsukazaki**  
Physical Review B **97**, 174520(2018). Editor's suggestion.
- 138) High-mobility field-effect transistor based on crystalline ZnSnO<sub>3</sub> thin films  
H. Minato, K. Fujiwara, **A. Tsukazaki**  
AIP Advances **8**, 055327 (2018).
- 137) Highly conductive PdCoO<sub>2</sub> ultrathin films for transparent electrodes  
T. Harada, K. Fujiwara, **A. Tsukazaki**  
APL Materials **6**, 046107 (2018). Editor's Pick.
- 136) Critical-current enhancement driven by suppression of superconducting fluctuation in ion-gated ultrathin FeSe  
T. Harada, J. Shiogai, T. Miyakawa, T. Nojima, **A. Tsukazaki**  
Superconductivity Science and Technology **31**, 055003 (2018).
- 135) Enhancement of superconducting transition temperature in FeSe electric-double-layer transistor with multivalent ionic liquids  
T. Miyakawa, J. Shiogai, S. Shimizu, M. Matsumoto, Y. Ito, T. Harada, K. Fujiwara, T. Nojima, Y. Itoh, T. Aida, Y. Iwasa, **A. Tsukazaki**  
Physical Review Materials **2**, 031801(R) (2018). Rapid Communication & Editor's suggestion.
- 134) Fermi level tuning of Dirac surface state in (Bi<sub>1-x</sub>Sb<sub>x</sub>)<sub>2</sub>Se<sub>3</sub> alloy thin films  
Y. Satake, J. Shiogai, D. Takane, K. Yamada, K. Fujiwara, S. Souma, T. Sato, T. Takahashi, **A. Tsukazaki**  
Journal of Physics: Condensed Matter **30**, 085501 (2018).
- 133) Large magneto-thermopower in MnGe with topological spin texture  
Y. Fujishiro, N. Kanazawa, T. Shimojima, A. Nakamura, K. Ishizaka, T. Koretsune, R. Arita, A. Miyake, H. Mitamura, K. Akiba, J. Shiogai, S. Kimura, S. Awaji, **A. Tsukazaki**, A. Kikkawa, Y. Taguchi, and Y. Tokura  
Nature Communications **9**, 408 (2018).
- 132) All-in-all-out Magnetic domain inversion in Tb<sub>2</sub>Ir<sub>2</sub>O<sub>7</sub> with molecular fields anti-parallel to external fields  
T. C. Fujita, Y. Kozuka, J. Matsuno, M. Uchida, **A. Tsukazaki**, T. Arima, M. Kawasaki  
Physical Review Materials **2**, 011402(R) (2019).

## 2017

- 131) Topological spin-hedgehog crystals of a chiral magnet as engineered with magnetic anisotropy  
N. Kanazawa, J. S. White, H. M. Ronnow, C. D. Dewhurst, D. Morikawa, K. Shibata, T. Arima, F. Kagawa, **A. Tsukazaki**, Y. Kozuka, M. Ichikawa, M. Kawasaki, Y. Tokura  
Physical Review B Rapid Communication **96**, 220414(R) (2017).

- 130) Visualizing ferroic domains in an all-in-all-out antiferromagnet thin film  
Y. Kozuka, T. C. Fujita, M. Uchida, T. Nojima, **A. Tsukazaki**, J. Matsuno, T. Arima, M. Kawasaki  
Physical Review B **96**, 224417 (2017).
- 129) Observation of superparamagnetism in coexistence with quantum anomalous Hall  $C = \pm 1$  and  $C = 0$  Chern states  
E. O. Lachman, M. Mogi, J. Sarkar, A. Uri, K. Bagani, Y. Anahory, Y. Myasoedov, M. E. Huber, **A. Tsukazaki**, M. Kawasaki, Y. Tokura, E. Zeldov  
npj Quantum Materials **2**, 70 (2017).
- 128) Quantized chiral edge conduction on reconfigurable domain walls of a magnetic topological insulator  
K. Yasuda, M. Mogi, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, F. Kagawa, Y. Tokura  
Science **358**, 1311 (2017).
- 127) Tailoring tricolor structure of magnetic topological insulator for robust axion insulator  
M. Mogi, M. Kawamura, **A. Tsukazaki**, R. Yoshimi, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Science Advances **3**, eaao1669 (2017).
- 126) Current-nonlinear Hall effect and spin-orbit torque magnetization switching in a magnetic topological insulator  
K. Yasuda, **A. Tsukazaki**, R. Yoshimi, K. Kondou, K. S. Takahashi, Y. Otani, M. Kawasaki, Y. Tokura  
Physical Review Letters **119**, 137204 (2017).
- 125) Fabrication of tetragonal FeSe - FeS alloy films with high sulfur contents by alternate deposition  
K. Fujiwara, J. Shiogai, **A. Tsukazaki**  
Japanese Journal of Applied Physics, Rapid communications **56**, 100308 (2017).
- 124) Nonlinear response of a MgZnO/ZnO heterostructure close to zero bias  
Q. Shi, J. Falson, M. A. Zudov, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki, J. Smet  
Physical Review B **96**, 125401 (2017).
- 123) A versatile patterning process based on easily soluble sacrificial bilayer  
T. Harada, **A. Tsukazaki**  
AIP Advances **7**, 085011 (2017).
- 122) Current-driven instability of the quantum anomalous Hall effect in ferromagnetic topological insulators  
M. Kawamura, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review Letters **119**, 016803 (2017).
- 121) Enhanced electron mobility at the two-dimensional metallic surface of BaSnO<sub>3</sub> electric-double-layer transistor at low temperatures  
K. Fujiwara, K. Nishihara, J. Shiogai, **A. Tsukazaki**  
Applied Physics Letters **110**, 203503 (2017).
- 120) Observation of anomalous Hall effect in a non-magnetic two-dimensional electron system  
D. Maryenko, A. S. Mishchenko, M. S. Bahramy, A. Ernst, J. Falson, Y. Kozuka, **A. Tsukazaki**, N. Nagaosa, M. Kawasaki  
Nature Communications **8**, 14777 (2017). DOI: 10.1038/ncomms14777
- 119) Unified trend of superconducting transition temperature against Hall coefficient for ultrathin FeSe films prepared on different oxide substrates  
J. Shiogai, T. Miyakawa, Y. Ito, T. Nojima, **A. Tsukazaki**  
Physical Review B **95**, 115101 (2017).
- 118) A magnetic heterostructure of topological insulators: a candidate for axion insulator  
M. Mogi, M. Kawamura, R. Yoshimi, **A. Tsukazaki**, Y. Kozuka, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Nature Materials **16**, 516 (2017).
- 117) Hall field-induced resistance oscillations in MgZnO/ZnO heterostructures  
Q. Shi, M. A. Zudov, J. Falson, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki, K. von Klitzing, J. Smet  
Physical Review B **95**, 041411(R) (2017).
- 116) Alloy disorder modulated electron transport at Mg<sub>x</sub>Zn<sub>1-x</sub>O/ZnO heterointerface  
Vishnuradhan, Y. Kozuka, M. Uchida, J. Falson, **A. Tsukazaki**, M. Kawasaki  
AIP Advances **7**, 015029 (2017).

- 115) Direct observation of the anisotropic magnetic field response of the spin helix in FeGe thin film  
N. Kanazawa, J. S. White, H. M. Ronnow, C. D. Dewhurst, Y. Fujishiro, **A. Tsukazaki**, Y. Kozuka, M. Kawasaki, M. Ichikawa, F. Kagawa, Y. Tokura  
Physical review B **94**, 184432 (2016).
- 114) Co thin films deposited directly on ZnO polar surfaces  
D. Chiba, N. Shibata, **A. Tsukazaki**  
Scientific Reports **6**, 38005 (2016).
- 113) Large unidirectional magnetoresistance in a magnetic topological insulator  
K. Yasuda, **A. Tsukazaki**, R. Yoshimi, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review Letters **117**, 127202 (2016).
- 112) High field-effect mobility at the (Sr,Ba)SnO<sub>3</sub> / BaSnO<sub>3</sub> interface  
K. Fujiwara, K. Nishihara, J. Shiogai, **A. Tsukazaki**  
AIP Advances **6**, 085014 (2016).
- 111) Fermi-level-dependent charge-to-spin current conversion by Dirac surface states of topological insulators  
K. Kondou, R. Yoshimi, **A. Tsukazaki**, Y. Fukumura, J. Matsuno, K. S. Takahashi, M. Kawasaki, Y. Tokura, Y. Otani  
Nature Physics **12**, 1027 (2016).
- 110) Zero-bias photocurrent in ferromagnetic topological insulator  
N. Ogawa, R. Yoshimi, **A. Tsukazaki**, M. Kawasaki, Y. Tokura  
Nature Communications **7**:12246 (2016), DOI:10.1038/ncomms12246.
- 109) Terahertz spectroscopy on Faraday and Kerr rotations in quantum anomalous Hall state  
K. N. Okada, Y. Takahashi, M. Mogi, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, N. Ogawa, M. Kawasaki, Y. Tokura  
Nature Communications **7**:12245 (2016), DOI:10.1038/ncomms12245.
- 108) Improvement of electron mobility in La:BaSnO<sub>3</sub> thin films by the insertion of atomically-flat insulating (Sr,Ba)SnO<sub>3</sub> buffer layer  
J. Shiogai, K. Nishihara, K. Sato, **A. Tsukazaki**  
AIP advances **6**, 065305 (2016).
- 107) MgZnO/ZnO heterostructures with electron mobility exceeding  $1 \times 10^6$  cm<sup>2</sup>/Vs  
J. Falson, Y. Kozuka, M. Uchida, J. H. Smet, T. Arima, **A. Tsukazaki**, M. Kawasaki  
Scientific Reports **6**:26598 (2016), DOI:10.1038/srep26598.
- 106) Observation of the quantum Hall effect in  $\delta$ -doped SrTiO<sub>3</sub>  
Y. Matsubara, K. S. Takahashi, M. S. Bahramy, Y. Kozuka, D. Maryenko, J. Falson, **A. Tsukazaki**, Y. Tokura, M. Kawasaki  
Nature Communications **7**:11631 (2016), DOI:10.1038/ncomms11631.
- 105) Geometrical Hall effects in topological insulator heterostructures  
K. Yasuda, R. Wakatsuki, T. Morimoto, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Ezawa, M. Kawasaki, N. Nagaosa, Y. Tokura  
Nature Physics **12**, 555 (2016).
- 104) All-in-all-out magnetic domain wall conduction in pyrochlore iridate heterointerface  
T. C. Fujita, M. Uchida, Y. Kozuka, W. Sano, **A. Tsukazaki**, T. Arima, M. Kawasaki  
Physical Review B **93**, 064419 (2016). Editor's suggestion.
- 103) Enhanced photovoltaic current in topological insulators via Fermi energy tuning  
K. N. Okada, N. Ogawa, R. Yoshimi, **A. Tsukazaki**, K. S. Takahashi, M. Kawasaki, Y. Tokura  
Physical Review B **83**, 081403(R) (2016). Rapid communication.
- 102) Quantum Hall effect in a bulk antiferromagnet EuMnBi<sub>2</sub> with magnetically confined two-dimensional Dirac fermions  
H. Masuda, H. Sakai, M. Tokunaga, Y. Yamasaki, A. Miyake, J. Shiogai, S. Nakamura, S. Awaji, **A. Tsukazaki**, H. Nakao, Y. Murakami, T. Arima, Y. Tokura, S. Ishiwata  
Science Advances **2**, e1501117 (2016).
- 101) Observation of microwave induced resistance and photovoltage oscillations in MgZnO/ZnO heterostructures

- D. F. Karcher, A. V. Shchepetilnikov, Y. A. nefyodov, J. Falson, I. A. Dmitriev, Y. Kozuka, D. Maryenko, A. Tsukazaki, S. I. Dorozhkin, I. V. Kukushkin, M. Kawasaki, J. H. Smet  
Physical Review B **93**, 041410(R) (2016).
- 100) All-in-all-out magnetic domain size in pyrochlore iridate thin films as probed by local magnetotransport  
T. C. Fujita, M. Uchida, Y. Kozuka, S. Ogawa, A. Tsukazaki, T. Arima, M. Kawasaki  
Applied Physics Letters **108**, 022402 (2016).
- 99) Electric-field-induced superconductivity in electrochemically-etched ultrathin FeSe films on SrTiO<sub>3</sub> and MgO  
J. Shiogai, Y. Ito, T. Mitsuhashi, T. Nojima, A. Tsukazaki  
Nature Physics **12**, 42 (2016).
- 2015**
- 98) Spin-selective electron quantum transport in non-magnetic MgZnO/ZnO heterostructures  
D. Maryenko, J. Falson, M. S. Bahramy, I. Dmitriev, Y. Kozuka, A. Tsukazaki, M. Kawasaki  
Physical Review Letters **115**, 197601 (2015).
- 97) Magnetic modulation doping in topological insulators toward higher-temperature quantum anomalous Hall effect  
M. Mogi, R. Yoshimi, K. Yasuda, A. Tsukazaki, N. Nagaosa, M. Kawasaki, Y. Tokura  
Applied Physics Letters **107**, 182401 (2015).
- 96) Quantum Hall states stabilized in semi-magnetic bilayers of topological insulators  
R. Yoshimi, K. Yasuda, A. Tsukazaki, K. S. Takahashi, N. Nagaosa, M. Kawasaki, Y. Tokura  
Nature Communications **6**, 8530 (2015). DOI:10.1038/ncomms9530
- 95) Formation of In-plane skyrmion in an epitaxial MnSi thin film revealed by planar Hall effect  
T. Yokouchi, N. Kanazawa, A. Tsukazaki, Y. Kozuka, A. Kikkawa, Y. Taguchi, M. Kawasaki, M. Ichikawa, F. Kagawa, Y. Tokura  
Journal of the Physical Society of Japan **84**, 104708 (2015). Editor's Choice.
- 94) Electron scattering times in ZnO based polar heterostructures  
J. Falson, Y. Kozuka, J. H. Smet, T. Arima, A. Tsukazaki, M. Kawasaki  
Applied Physics Letters **107**, 082102 (2015).
- 93) Magnetic field-induced insulator-semimetal transition in a pyrochlore Nd<sub>2</sub>Ir<sub>2</sub>O<sub>7</sub>  
K. Ueda, J. Fujioka, B. -J. Yang, J. Shiogai, A. Tsukazaki, S. Nakamura, S. Awaji, N. Nagaosa, Y. Tokura  
Physical Review Letters **115**, 056402 (2015).
- 92) Topological Hall effect in Heisenberg ferromagnet EuO thin films  
Y. Ohuchi, Y. Kozuka, M. Uchida, K. Ueno, A. Tsukazaki, M. Kawasaki  
Physical Review B **91**, 245115 (2015).
- 91) Odd-parity magnetoresistance in pyrochlore iridate thin films with broken time-reversal symmetry  
T. C. Fujita, Y. Kozuka, M. Uchida, A. Tsukazaki, T. Arima, M. Kawasaki  
Scientific Reports **5**, 9711 (2015).
- 90) Quantum Hall effect on top and bottom surface states of the topological insulator thin films  
R. Yoshimi, A. Tsukazaki, Y. Kozuka, J. Falson, K. S. Takahashi, J. G. Checkelsky, N. Nagaosa, M. Kawasaki, Y. Tokura  
Nature Communications **6**, 6627 (2015). DOI:10.1038/ncomms7627
- 89) Even-denominator fractional quantum Hall physics in ZnO  
J. Falson, D. Maryenko, B. Friess, D. Zhang, Y. Kozuka, A. Tsukazaki, J. H. Smet, M. Kawasaki  
Nature Physics **11**, 347 (2015). DOI: 10.1038/NPHYS3259
- 88) Optical probing of MgZnO/ZnO heterointerface confinement potential energy levels  
V. V. Solovyev, A. B. Van'kov, I. V. Kukushkin, J. Falson, D. Zhang, D. Maryenko, Y. Kozuka, A. Tsukazaki, J. H. Smet, M. Kawasaki  
Applied Physics Letters **106**, 082102 (2015).
- 87) Microwave magnetoplasma resonances of two-dimensional electrons in MgZnO/ZnO heterojunctions  
V. E. Kozlov, A. B. Van'kov, S. I. Gubarev, I. V. Kukushkin, V. V. Slovyev, J. falson, D. Maryenko, Y. Kozuka, A. Tsukazaki, M. Kawasaki, J. Smet  
Physical Review B **91**, 085304 (2015).

- 86) Discretized topological Hall effect emerging from skyrmions in constricted geometry  
N. Kanazawa, M. Kubota, A. Tsukazaki, Y. Kozuka, K. S. Takahashi, M. Kawasaki, M. Ichikawa, F. Kagawa, Y. Tokura  
Physical Review B **91**, 041122(R) (2015).
- 85) Calibration and control of in-plane Mg doping distribution in  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  heterostructures grown by molecular beam epitaxy  
M. Uchida, J. Falson, Y. Segawa, Y. Kozuka, A. Tsukazaki, M. Kawasaki  
Japanese Journal of Applied Physics **54**, 028004 (2015).

## 2014

- 84) Polarization-dependent Landau level crossing in a two-dimensional electron system in a  $\text{MgZnO}/\text{ZnO}$  heterostructure  
D. Maryenko, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki  
Physical Review B **90**, 245303 (2014).
- 83) Air-gap gating of  $\text{MgZnO}/\text{ZnO}$  heterostructures  
T. Tambo, J. Falson, D. Maryenko, Y. Kozuka, A. Tsukazaki, M. Kawasaki  
Journal of Applied Physics **116**, 084310 (2014).
- 82) 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).
- 81) Spontaneous polarization driven Mg concentration profile reconstruction in  $\text{MgZnO}/\text{ZnO}$  heterostructures  
K. Imasaka, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki  
Applied Physics Letters **104**, 242112 (2014).
- 80) 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).
- 79) 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).
- 78) 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).
- 77) Enhanced quantum oscillatory magnetization and non-equilibrium currents in an interacting electron system in  $\text{MgZnO}/\text{ZnO}$  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).
- 76) Challenges and opportunities of ZnO-related single crystalline heterostructures.  
Y. Kozuka, A. Tsukazaki, M. Kawasaki  
Applied Physics Review **1**, 011303 (2014).
- 75) 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

- 74) 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).
- 73) 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).
- 72) Observation of plasma and magnetoplasma resonances of two-dimensional electrons in a single  $\text{MgZnO}/\text{ZnO}$

heterojunction

V. E. Kozlov, A. B. Van'kov, S. I. Gubarev, I. V. Kukushkin, J. Falson, D. Maryenko, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki, J. H. Smet  
JETP Letters **98**, 223 (2013).

- 71) Magneto-photoluminescence of charged excitons from  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  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).
- 70) 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

- 69) Single-valley quantum Hall ferromagnet in a dilute  $\text{Mg}_x\text{Zn}_{1-x}\text{O} / \text{ZnO}$  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).
- 68) 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).
- 67) 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).
- 66) Precise calibration of Mg concentration in  $\text{Mg}_x\text{Zn}_{1-x}\text{O}$  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).
- 65) Gate control of surface transport in MBE-grown topological insulator  $(\text{Bi}_{1-x}\text{Sb}_x)_2\text{Te}_3$  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).
- 64) 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).
- 63) 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).
- 62) Correlation enhanced effective mass of two-dimensional electrons in  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  heterostructures  
Y. Kasahara, Y. Oshima, J. Falson, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki, Y. Iwasa  
Physical Review Letters **109**, 246401 (2012).

## 2011

- 61) Magnesium doping controlled density and mobility of two-dimensional electron gas in  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  heterostructures  
J. Falson, D. Maryenko, Y. Kozuka, **A. Tsukazaki**, M. Kawasaki  
Applied Physics Express **4**, 091101 (2011).
- 60) Improvement of electron mobility above  $100,000 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$  in  $\text{Mg}_x\text{Zn}_{1-x}\text{O} / \text{ZnO}$  heterostructures  
S. Akasaka, **A. Tsukazaki**, K. Nakahara, A. Ohtomo, M. Kawasaki  
Japanese Journal of Applied Physics Letters **50**, 080215 (2011).
- 59) Insulating phase of a two-dimensional electron gas in  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  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).
- 58) Pulsed laser deposition and ionic liquid gate control of epitaxial  $\text{Bi}_2\text{Se}_3$  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).

- 57) 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).
- 56) 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).
- 55) 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

- 54) 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).
- 53) Electrostatic and electrochemical nature of liquid-gated electric-double-layer transistors based on oxide semiconductors  
H. Yuan, H. Shimotani, J. Ye, S. Yoon, H. Aliah, **A. Tsukazaki**, M. Kawasaki, Y. Iwasa  
Journal of the American Chemical Society **132**, 18402-18407 (2010).
- 52) 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).
- 51)  $\text{Mg}_x\text{Zn}_{1-x}\text{O}$  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).
- 50) Nitrogen doped  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  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).
- 49) Optimization of the growth conditions for molecular beam epitaxy of  $\text{Mg}_x\text{Zn}_{1-x}\text{O}$  ( $0 \leq x \leq 0.12$ ) films on Zn-polar ZnO substrates  
H. Yuji, K. Nakahara, K. Tamura, S. Akasaka, Y. Nishimoto, D. Takamizu, T. Onuma, S. F. Chichibu, **A. Tsukazaki**, A. Ohtomo, M. Kawasaki  
Japanese Journal of Applied Physics **49**, 071104 (2010).
- 48) 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).
- 47) 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).
- 46) 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).
- 45) Spatial distribution of two-dimensional electron gas in a  $\text{ZnO}/\text{Mg}_{0.2}\text{Zn}_{0.8}\text{O}$  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

- 44) Magneto-optical study of  $n$ -type modulation-doped  $\text{ZnO}/\text{Mg}_x\text{Zn}_{1-x}\text{O}$  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).

- 43) 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

- 42) 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).
- 41) Spin susceptibility and effective mass of two-dimensional electrons in  $\text{Mg}_x\text{Zn}_{1-x}\text{O}/\text{ZnO}$  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).
- 40)  $\text{Mg}_x\text{Zn}_{1-x}\text{O}$ -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).
- 39) 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).
- 38) 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).
- 37) Plasma-assisted molecular beam epitaxy of high optical quality  $\text{MgZnO}$  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).
- 36) 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).
- 35) High electron mobility exceeding  $10^4 \text{ cm}^2\text{V}^{-1}\text{s}^{-1}$  in  $\text{MgZnO}/\text{ZnO}$  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).
- 34) Photoinduced insulator-to-metal transition in  $\text{ZnO}/\text{Mg}_{0.15}\text{Zn}_{0.85}\text{O}$  heterostructures  
A. Tsukazaki, A. Ohtomo, M. Nakano, M. Kawasaki  
Applied Physics Letters **92**, 052105 (2008).

## 2007

- 33) 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).
- 32) 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).
- 31) 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).

30) Recombination dynamics of excitons in  $\text{Mg}_{0.11}\text{Zn}_{0.89}\text{O}$  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).

29) Quantum Hall-effect in polar oxide heterostructures  
**A. Tsukazaki**, A. Ohtomo, T. Kita, Y. Ohno, H. Ohno, M. Kawasaki  
Science **315**, 1388 (2007).

## 2006

28) 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).

27) Hole transport in p-type ZnO  
T. Makino, **A. Tsukazaki**, A. Ohtomo, M. Kawasaki, H. Koinuma  
Japanese Journal of Applied Physics **45**, 6346 (2006).

26) 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).

25) 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).

24) High-mobility electronic transport in ZnO thin films  
**A. Tsukazaki**, A. Ohtomo, M. Kawasaki  
Applied Physics Letters **88**, 152106 (2006).

## 2005

23) 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).

22) 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).

21) Electron transport in ZnO thin films  
T. Makino, Y. Segawa, **A. Tsukazaki**, A. Ohtomo, M. Kawasaki  
Applied Physics Letters **87**, 022101 (2005).

20 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).

19) 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).

18) Pulsed laser deposition of thin films and superlattices based on ZnO  
A. Ohtomo, **A. Tsukazaki**  
Semiconductor Science and Technology **20**, S1 (2005).

17) 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

16) Hall and field-effect mobilities of electrons accumulated at a lattice-matched ZnO/ScAlMgO<sub>4</sub> heterointerface  
T. I. Suzuki, A. Ohtomo, **A. Tsukazaki**, F. Satoh, J. Nishii, H. Ohno, M. Kawasaki

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

- 15) 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).
- 14) 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).
- 13) 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).
- 12) Epitaxial growth and physical properties of a room temperature ferromagnetic semiconductor: Anatase phase  $\text{Ti}_{1-x}\text{Co}_x\text{O}_2$   
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)
- 11) 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).
- 10) 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

- 9) 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).
- 8) Donor-acceptor pair luminescence in nitrogen-doped ZnO films grown on lattice-matched  $\text{ScAlMgO}_4(0001)$  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).
- 7) Defects in ZnO thin films grown on  $\text{ScAlMgO}_4$  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).
- 6) 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).
- 5) Magneto-optical spectroscopy of anatase  $\text{TiO}_2$  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).
- 4) 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

- 3) Systematic examination of carrier polarity in composition spread ZnO thin films codoped with Ga and N  
**A. Tsukazaki**, H. Saito, K. Tamura, M. Ohtani, H. Koinuma, M. Sumiya, S. Fuke, T. Fukumura, M. Kawasaki  
Applied Physics Letters **81**, 235 (2002).
- 2) Photoreflectance spectra of a ZnO heteroepitaxial film on the nearly lattice-matched  $\text{ScAlMgO}_4(0001)$  substrate

grown by laser molecular-beam epitaxy.

S. F. Chichibu, A. Tsukazaki, M. Kawasaki, K. Tamura, Y. Segawa, T. Sota, H. Koinuma  
Applied Physics Letters **80**, 2860 (2002).

## **2000**

- 1) Investigation of ZnO/sapphire interface and formation of ZnO nanocrystalline by Laser MBE.  
I. Ohkubo, Y. Matsumoto, A. Ohtomo, T. Ohnishi, A. Tsukazaki, M. Lippmaa, H. Koinuma, M. Kawasaki  
Applied Surface Science **159-160**, 514 (2000).

### List of conference presentations: (only invited talks in international conferences)

- 30) Appearance of Weyl features in thickness-dependent electrical transport of  $\text{Co}_3\text{Sn}_2\text{S}_2$  thin films  
**A. Tsukazaki**  
The 5th symposium for core research clusters for materials science and spintronics and The 4th GP-MS, (on-line)  
Oct. 27, 2021
- 29) Thin film devices based on topological materials  
**A. Tsukazaki**  
3rd EPiQS-TMS alliance workshop on topological materials science, UCSB USA, Oct. 21-25, 2019.
- 28) Interface engineering of Sn-based oxide semiconductors  
**A. Tsukazaki**  
Compound semiconductor week (CSW2019), Nara, May 19-22, 2019.
- 27) High- $T_c$  superconductivity in FeSe electric-double-layer transistor  
**A. Tsukazaki**  
The 8<sup>th</sup> Indo-Japan Seminar, Tokyo, Jan. 31- Feb. 2, 2019.
- 26) Emergent phenomena at the thin films heterostructures  
**A. Tsukazaki**  
Summit of Materials Science (SMS2018), Sendai, Oct. 29-30, 2018.
- 25) Edge current control in magnetic topological insulator heterostructures  
**A. Tsukazaki**  
MRS spring meeting, Phoenix USA April 4, 2018.
- 24) Quantum anomalous Hall effect in topological insulator Cr-doped  $(\text{Bi,Sb})_2\text{Te}_3$  heterostructures  
**A. Tsukazaki**  
TOPO MAT meeting, Stuttgart, Germany Sep. 19-21, 2016.
- 23) High- $T_c$  Superconductivity in FeSe electric-double-layer transistor  
**A. Tsukazaki**  
Symposium on Quantum Materials Synthesis (QMS), NY USA Aug.30-Sep.1, 2016.
- 22) Electrochemical etching approach to ‘ultrathin’ superconductor FeSe in EDL transistor configuration  
**A. Tsukazaki**  
RIKEN Topical meeting, Wako December 10-11, 2015.
- 21) Quantized Hall effects in topological insulator field-effect transistors  
**A. Tsukazaki**  
New trends in topological insulator, San Sebastian, Spain, July 8, 2015.
- 20) Polarization engineering in polar-semiconductor ZnO heterostructures  
**A. Tsukazaki**  
Seminar in Max Planck Institute, Stuttgart, Germany. March 9, 2015
- 19) Transport properties of the surface states in  $(\text{Bi}_{1-x}\text{Sb}_x)_2\text{Te}_3$  thin film devices  
**A. Tsukazaki**  
The Asia-Pacific Workshop on Strongly correlated system 2014 (APW-2014), Beijing, Oct. 10, 2014.
- 18) High mobility 2D transport in well-regulated ZnO based wurtzite heterostructures  
**A. Tsukazaki**  
MRS Fall meeting, Boston, USA, December 4, 2013.
- 17) Polar discontinuity effect in Wurtzite ZnO based heterostructures  
**A. Tsukazaki**  
JSAP-MRS symposia, Kyoto, September 19, 2013.
- 16) Interface engineering for high mobility 2DEG on polar-oxide semiconductors  
**A. Tsukazaki**  
The 40<sup>th</sup> international symposium on Compound Semiconductors, Kobe, May 23, 2013.
- 15) Quantum Hall effect in MgZnO/ZnO heterostructures  
**A. Tsukazaki**  
4<sup>th</sup> International Workshop on Emergent Phenomena in Quantum Hall Systems (EPQHS),

Beijing, China, June 23-26, 2011.

- 14) Fractional quantum Hall effect at the MgZnO/ZnO heterointerfaces  
**A. Tsukazaki**  
38<sup>th</sup> International symposium on Compound Semiconductors (ISCS), Berlin, Germany, May 22-26, 2011.
- 13) 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.
- 12) 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.
- 11) Observation of fractional quantum Hall effect in MgZnO/ZnO based heterostructures  
**A. Tsukazaki**  
American Physical Society March meeting, Portland, USA, March 15-19, 2010.
- 10) 2D electron transport in Mg<sub>x</sub>Zn<sub>1-x</sub>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.
- 9) Quantum transport at MgZnO/ZnO interface  
**A. Tsukazaki**  
CNSI- RIEC Workshop on Nanoelectronics, Spintronics and Photonics, Santa Barbara, USA, Oct. 9-10, 2008.
- 8) Quantum transport phenomena in Mg<sub>x</sub>Zn<sub>1-x</sub>O/ZnO heterointerface  
**A. Tsukazaki**  
ATI international workshop, CREST international workshop, and Global COE international workshop on Spin currents, Japan, Feb. 19, 2008.
- 7) 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.
- 6) 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.
- 5) Key materials aspects for valence control of ZnO  
**A. Tsukazaki**  
American Physical Society March meeting, Baltimore, USA, 2006.
- 4) Blue light emitting diode based on ZnO  
**A. Tsukazaki**, M. Kubota, A. Ohtomo, T. Onuma, K. Ohtani, H. Ohno, S. F. Chichibu, M. Kawasaki  
67<sup>th</sup> autumn meeting of Japan Society of Applied Physics, Japan, 2006.
- 3) 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. Ohno, H. Ohno, T. Makino, Y. Segawa, H. Koinuma  
COE mini-workshop on "Strongly Correlated Electronics", Kashiwa, Jan. 14, 2006.
- 2) 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. Ohno, H. Ohno, T. Makino, Y. Segawa, H. Koinuma  
Materials Research Society Fall meeting, Boston, USA, 2005.
- 1) 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.