

業績リスト

2023年5月1日更新

産業技術総合研究所 ナノカーボンデバイス研究センター 山田 貴壽

(1) 原著論文

(ア) 筆頭原著招待論文

1. T. Yamada, M. Ishihara, J. Kim and M. Hasegawa, "Low temperature graphene synthesis by microwave plasma CVD", *J. Phys. D* **46** (2013) 063001. (**Most read Most cited Latest articles, Select articles, Review articles**)
2. T. Yamada, H. Yamaguchi, K. Okano and A. Sawabe, "Field emission from boron and phosphorus doped diamond", *New Diamond and Frontier Carbon Technology* **15** (2005) 337.
3. 山田貴壽, 張甲淳, 岡野健, 平木昭夫, "負の電子親和力を持つダイヤモンドからの電子放出", *電子情報通信学会誌 J81-C-II*, 180 (1998).

(イ) 筆頭原著論文

1. T. Yamada, Y. Okigawa, M. Hasegawa, K. Watanabe and T. Taniguchi, "Relationship between mobility and strain in CVD graphene on h-BN", *AIP Adv.* **10**, 085309 (2020). (**Feature article, cover picture**)
2. T. Yamada and T. Masuzawa, "Field emission from potassium-doped vertically aligned carbon nanosheet", *Vacuum* **167**, 64 (2019).
3. T. Yamada, T. Masuzawa, H. Mimura and K. Okano, "Field emission spectroscopy measurements of graphene/n-type diamond heterojunction", *Appl. Phys. Lett.* **114**, 231601 (2019).
4. T. Yamada, Y. Okigawa and M. Hasegawa, "Potassium-doped n-type stacked graphene layers", *Mater. Res. Exp.* **6**, 055009 (2019).
5. T. Yamada, Y. Okigawa and M. Hasegawa, "Potassium-doped n-type bilayer graphene", *Appl. Phys. Lett.* **112**, 043105 (2018).
6. T. Yamada, H. Kato, Y. Okigawa, M. Ishihara and M. Hasegawa, "Electrical properties of bilayer graphene synthesized by surface wave microwave plasma techniques at low temperature", *Nanotechnology* **28** (2017) 025725.
7. T. Yamada, T. Masuzawa, H. Mimura and K. Okano, "Electron emission from conduction band of heavily phosphorus doped diamond negative electron affinity surface", *J. Phys. D: Appl. Phys.* **49** (2015) 045102.
8. T. Yamada, T. Masuzawa, T. Ebisudani, K. Okano and T. Taniguchi, "Field emission characteristics of graphene/hexagonal boron nitride structure", *Appl. Phys. Lett.* **104** (2014) 221603
9. T. Yamada, M. Ishihara and M. Hasegawa, "Low-temperature graphene synthesis from poly (methyl methacrylate) using microwave plasma treatment", *Appl. Exp. Lett.* **6** (2013) 115102.
10. T. Yamada and M. Hasegawa, "Nanocrystalline and microcrystalline diamond stacking structure as an insulating material deposited on large area", *Phys. Stat. Sol. (a)* **210** (2013) 1998-2001.
11. T. Yamada, M. Ishihara and M. Hasegawa, "Large area coating of graphene at low temperature using a roll-to-roll microwave plasma chemical vapor deposition", *Thin Solid Films* **532** (2013) 89-93.
12. T. Yamada, M. Ishihara, J. Kim, M. Hasegawa and S. Iijima, "A roll-to-roll microwave plasma chemical vapor deposition process for production of 294 mm width graphene films at low temperature", *Carbon* **50** (2012) 2615-2619. (**Most down loaded paper**)
13. T. Yamada, C. E. Nebel and T. Taniguchi, "Field emission model of n-type single crystal cubic boron nitride", *J. Vac. Sci. Technol. B.* **29** (2011) 02B115.
14. T. Yamada, S. Shikata and C. E. Nebel, "Resonant field emission from 2D-DOS on hydrogen terminated intrinsic diamond", *J. Appl. Phys.* **107** (2010) 013705.
15. T. Yamada, C. E. Nebel and S. Shikata, "Field emission characteristics of nano-structured phosphorus-doped diamond", *Appl. Sur. Sci.* **256**(2009)1006.
16. T. Yamada, C. E. Nebel, K. Somu and S. Shikata, "Surface modification by vacuum annealing for field emission from heavily phosphorus-doped homoepitaxial (111) diamond" *Appl. Sur. Sci.* **254** (2008) 7921.
17. T. Yamada, S. Kumaragurubaran, C. E. Nebel and S. Shikata, "Effect of annealing temperature on field emission properties of P-doped diamond", *Diam. Relat. Mater.* **17** (2008) 745.

18. T. Yamada, C. E. Nebel, S. Kumaragurubaran, H. Uetsuka, H. Yamaguchi, Ken Okano and S. Shikata, "Field emission from reconstructed phosphorus-doped homoepitaxial diamond (111)", *phys. stat. sol. (a)* **204** (2007) 2957.
19. T. Yamada, H. Yoshikawa, S. Kumaragurubaran, H. Uetsuka, N. Tokuda and S. Shikata, "Cycle of two-plasma etching process using ICP for diamond MEMS applications", *Diam. Relat. Mater.* **16** (2007) 996.
20. T. Yamada, H. Yamaguchi, Y. Kudo, K. Okano, S. Shikata and C. E. Nebel, "Field emission from surface-reconstructed heavily phosphorus-doped homoepitaxial diamond (111)", *J. Vac. Sci. Technol. B* **25** (2007) 528.
21. T. Yamada, H. Kato, D. Takeuchi, S. Shikata, H. Yamaguchi, K. Okano and C. E. Nebel, "Field emission process of O-terminated heavily P-doped diamond", *Dia. Relat. Mater.* **15** (2006) 863.
22. T. Yamada, K. Okano, H. Yamaguchi, H. Kato S. Shikata and C. E. Nebel, "Field emission from reconstructed heavily phosphorus-doped diamond", *App. Phys. Lett.* **88** (2006) 212114.
23. T. Yamada, H. Kato, S. Shikata, C. E. Nebel, H. Yamaguchi, Y. Kudo and K. Okano, "Field emission from H- and O-terminated heavily P-doped homoepitaxial diamond", *J. Vac. Sci., Technol. B* **24** (2006) 967.
24. T. Yamada, C. E. Nebel, D. Takeuchi, B. Rezek, N. Fujimori, Y. Nishibayashi, A. Namba, H. Yamaguchi, I. Saito and K. Okano, "Field emission mechanism of oxidized highly phosphorus-doped homoepitaxial diamond (111)", *Appl. Phys. Lett.* **87** (2005) 234107.
25. T. Yamada, P. R. Vinod, D. H. Hwang, H. Yoshikawa, S. Shikata and N. Fujimori, "Self-aligned fabrication of single crystal diamond gated field emitter array", *Diam. Relat. Mater.* **14** (2005) 2047.
26. T. Yamada, D. S. Hang, P. R. Vinod and N. Fujimori, "Characterization of field emission from nano-scaled diamond tip arrays", *Jpn. J. Appl. Phys.* **44** (2005) L385.
27. T. Yamada, A. Kojima, S. Sawabe and K. Suzuki, "Passivation of hydrogen terminated diamond surface conductive layer using hydrogenated amorphous carbon", *Diam. Relat. Mater.* **13** (2004) 776.
28. T. Yamada, T. Yokoyama and A. Sawabe, "Electron emission from hydrogenated and oxidized heteroepitaxial diamond doped with boron", *Diam. Relat. Mater.* **11** (2002) 780.
29. T. Yamada, A. Sawabe, S. Koizumi, T. Kamio and K. Okano, "Growth of homoepitaxial diamond doped with nitrogen for electron emitter", *Diam. Relat. Mater.* **11** (2002) 257.
30. T. Yamada, A. Sawabe, S. Koizumi, J. Itoh, T. Kamio and K. Okano, "Effect of sp²/sp³ on electron emission properties of nitrogen-doped diamond electron emitter", *phys. stat. sol. (a)* **186** (2001) 257.
31. T. Yamada, K. Kanda, K. Okano and A. Sawabe, "Effect of oxygen coverage on electron emission from boron-doped polycrystalline diamond", *Jpn. J. Appl. Phys.* **40** (2001) L829.
32. T. Yamada, A. Sawabe, S. Koizumi, J. Itoh and K. Okano, "Uniform electron emission from nitrogen-doped diamond-based electron emitter fabricated by sintering technique", *IEEE. Electron Device Lett.* **21** (2000) 531.
33. T. Yamada, A. Sawabe, S. Koizumi, J. Itoh and K. Okano, "Potential profile between anode electrode and boron-doped diamond electron emitter", *Appl. Phys. Lett.* **76** (2000) 1297.
34. T. Yamada, H. Maede and A. Sawabe, "Electron emission from a heteroepitaxial diamond planar emitter", *Jpn. J. Appl. Phys.* **38** (1999) L902.
35. T. Yamada, A. Sawabe, K. Okano, S. Koizumi and J. Itoh, "Formation of backcontacts on diamond electron emitters", *Appl. Sur. Sci.* **146** (1999) 245.
36. T. Yamada, H. Ishihara, K. Okano, S. Koizumi and J. Itoh, "Electron emission from pyramidal-shape diamond after hydrogen and oxygen surface treatments", *J. Vac. Sci. Technol. B* **15** (1997) 1678.

(ウ) 共著原著論文

1. T. Masuzawa, T. Miyake, H. Nakagawa, T. Nakano, K. Takagi, T. Aoki, H. Mimura and T. Yamada, "Characterization of diamond radiation detector with B-doped/undoped stacked structure", *Diam. Relat. Mater.* Accepted for publication.
2. M. Haruyama, Y. Okigawa, M. Okada, H. Nakajima, T. Okazaki, H. Kato, T. Yamada, "Charge stabilization of shallow nitrogen-vacancy centers using graphene/diamond junction", *Appl. Phys. Lett.* **112** (2023) 141601. **(Editor's Pick)**
3. S. Ogawa, Y. Tsuda, T. Sakamoto, Y. Okigawa, T. Masuzawa, A. Yoshigoe, T. Abukawa, T. Yamada, "Evaluation of Doped Potassium Concentrations in Stacked Tow-Layer Graphene using Real-time XPS", *Appl. Sur. Sci.* **605** (2022) 154748. **[corresponding author]**
4. M. Okada, J. Pu, Y. -C. Lin, T. Endo, N. Okada, W. -H. Chang, A. K. A. Lu, T. Nakanishi, T. Shimizu, T. Kubo, Y. Miyata, K. Suenaga, T. Takenobu, T. Yamada, T. Irisawa, "Large-Scale

- 1T'-Phase Tungsten Disulfide Atomic Layers Grown by Gas-Source Chemical Vapor Deposition", *ACS Nano* **16** (2022) 13069.
5. M. Zhang, M. Yang, Y. Okigawa, T. Yamada, H. Nakajima, Y. Iizumi, T. Okazaki, "Patterning of graphene using wet etching with hypochlorite and UV light", *Sci. Rep.* **12** (2022) 4541.
 6. R. Senga, Y. -C. Lin, S. Morishita, R. Kato, T. Yamada, M. Hasegawa, K. Suenaga, "Imaging of isotope diffusion using atomic-scale vibrational spectroscopy", *Nature* **603** (2022).
 7. T. Miyake, H. Nakagawa, T. Masuzawa, T. Yamada, T. Nakano, K. Takagi, T. Aoki, H. Mimura, "Diamond radiation detector with built-in boron-doped neutron converter layer", *Phys. Stat. Solid (A)* **219** (2022) 2270006. **(Cover picture)**
 8. M. Okada, N. Nagamura, T. Matsumura, Y. Ando, A. Khoa, A. Lu, N. Okada, W.-H. Chang, T. Shimizu, T. Kubo, T. Irisawa and T. Yamada, "Growth of MoS₂-Nb-doped MoS₂ lateral homojunctions: A monolayer p-n diode by substitutional doping", *APL Mater.* **9** (2021) 121115. **(Cover picture)**
 9. T. Masuzawa, Y. Okigawa, S. Ogawa, Y. Takakuwa, K. Hatakeyama and T. Yamada, "Synthesis and characterization of potassium-doped multilayer graphene prepared by wet process using potassium hydroxide", *Nano Exp.* **2** (2021) 030004. **[corresponding author]**
 10. Y. Okigawa, T. Masuzawa, K. Watanabe, T. Taniguchi and T. Yamada, "Temperature dependence of carrier mobility in chemical vapor deposited graphene on high-pressure, high-temperature hexagonal boron nitride", *Appl. Sur. Sci.* **562**, 150146 (2021).
 11. J. Choi, N. Okimura, T. Yamada, Y. Hirata, N. Ohtake and H. Akasaka, "Deposition of graphene-copper composite film by cold spray from particles with graphene grown on copper particles", *Diam. Relat. Mater.* **116**, 108384 (2021).
 12. M. Matsuoka, Y. Tsuchida, N. Ohtani, T. Yamada, S. Koizumi and S. Shikata, "Polarized Raman spectroscopy of phosphorus doped diamond films", *Diam. Relat. Mater.* **114**, 108283 (2021).
 13. J. D. John, S. Okano, A. Sharma, S. Nishimoto, N. Miyachi, K. Enomoto, J. Oshiai, I. Saito, G. Salvan, T. Masuzawa, T. Yamada, D. H. Chua, D. R. T. Zahn and K. Okano, "Spectroscopic ellipsometry of amorphous Se superlattices", *J. Phys. D: Appl. Phys.* **54**, 255106 (2021).
 14. S. Ogawa, H. Yamaguchi, E. F. Holby, T. Yamada, A. Yoshigoe and Y. Takakuwa, "Gas barrier properties of chemical vapor-deposited graphene to oxygen imparted with sub-electronvolt kinetic energy", *J. Phys. Chem. Lett.* **11**, 9159 (2020). **(Cover picture)**
 15. Y. Suzuki, T. Yamada, M. Hietschold and K. Okano, "Growth of Cu phthalocyanine thin films on Sb passivated vicinal Si(111) with molecular columns parallel to the surface", *Jpn. J. Appl. Phys.* **59**, 095001 (2020).
 16. J. D. John, S. Okano, A. Sharma, M. Rahaman, O. Selyshchev, N. Miyachi, K. Enomoto, J. Oshiai, G. Salvan, T. Masuzawa, T. Yamada, D. H. C. Chua, D. R. T. Zahn and K. Okano, "Observation of two-level defect system in amorphous Se superlattice", *Appl. Phys. Lett.* **116**, 192104 (2020).
 17. S. Shikata, K. Yamaguchi, A. Fujiwara, Y. Tamenori, K. Tsurata, T. Yamada, S. S. Nicley, K. Haenen and S. Koizumi, "X-ray absorption near edge structure and extended X-ray absorption fine structure studies of P doped (111) diamond", *Diam. Relat. Mater.* **105**, 107769 (2020).
 18. J. D. John, S. Okano, A. Sharma, O. Selyshchev, M. Rahaman, N. Miyachi, K. Enomoto, J. Oshiai, G. Salvan, T. Masuzawa, T. Yamada, D. H. C. Chua, D. R. T. Zahn and K. Okano, "Transport properties of Se/As₂Se₃ nanolayer superlattice fabricated using rotational evaporation", *Adv. Funct. Mater.* **29**, 1904758 (2019).
 19. S. Ogawa, T. Yamada, R. Kadowaki, T. Taniguchi, T. Abukawa and Y. Takakuwa, "Band alignment determination of bulk h-BN and graphene/h-BN laminates using photoelectron emission microscopy", *J. Appl. Phys.* **125**, 144303 (2019).
 20. T. Masuzawa, Y. Neo, H. Mimura, K. Okano and T. Yamada, "Electron emission mechanism of heavily phosphorus-doped diamond with oxidized surface", *Phys. Stat. Solid (A)* **216**, 1801025 (2019).
 21. H. Nakajima, T. Morimoto, Y. Okigawa, T. Yamada, Y. Ikuta, K. Kawahara, H. Ago and T. Okazaki, "Imaging of local structures affecting electrical transport properties of large sheets by lock-in thermography", *Sci. Advances* **5**, eaau3407 (2019).
 22. S. Shikata, T. Tanno, T. Teraji, H. Kanda, T. Yamada and J. Kushiniki, "Precise measurements of diamond lattice constant using bond method", *Jpn. J. Appl. Phys.* **57**, 111301, (2018).
 23. T. Masuzawa, A. Ohata, J. D. John, I. Sato, T. Yamada, D. H. C. Chua, Y. Neo, H. Mimura and K. Okano, "Formation of p-n junction in a-Se thin film and its application to high sensitivity photodetector driven by diamond cold cathode", *Phys. Stat. Solid (A)* **214**, 1700161 (2017).

24. J. D. John, I. Saito, J. Ochiai, R. Toyama, T. Masuzawa, T. Yamada, D. H. C. Chua and K. Okano, "Electrosi as controllabule method for establishing p-n junctions in multi-monolayer films of amorphous selenium", *J. Appl. Phys.* **122**, 065107. (2017).
25. J. D. John, I. Saito, R. Toyama, J. Ochiai, T. Yamada, T. Masuzawa, D. H. C. Chua and K. Okano, "Electric properties and potential applications of the heterojunction between silicon and multi-nanolayer amorphous selenium", *Electron. Lett.* **53**, 1270 (2017).
26. K. Ishi, M. Iwamura, T. Yamada and T. Kuzumaki, "Preparation of optically transparent graphene film by phase transformation of C₆₀ molecules", *Sensors and Materials* **29**, 785 (2017).
27. S. Shikata, K. Yamaguchi, A. Fujiwara, Y. Tamenori, J. Yashiro, M. Kunisu and T. Yamada, "X-ray absorption fine structure study of heavily P doped (111) and (001) diamond" *Appl. Phys. Lett.* **110**, 072106 (2017).
28. T. Masuzawa, Y. Kudo, H. Mimura, Y. Neo, K. Okano and T. Yamada, "Modification of internal barrier in hydrogen-terminated heavily phosphorus-doped diamond for field emission", *Phys. Stat. Solid. (A)* **213**, 2063 (2016).
29. J. Ceremak, T. Yamada, K. Ganzeora, B. Rezek, "Doping effects and grain boundaries in thermal CVD graphene on recrystallized Cu foil", *Advanced Materials Interfaces* **3**, 1600166 (2016).
30. Y. Okigawa, R. Kato, T. Yamada, M. Ishihara, M. Hasegawa, "Effects of outgassing on graphene synthesis by plasma treatment", *Carbon* **108**, 351 (2016).
31. H. Yamaguchi, S. Ogawa, D. Watanabe, H. Hozumi, Y. Gao, G. Eda, C. Mattevi, T. Fujita, A. Ypshigoe, S. Ishiduka, L. Adamska, T. Yamada, A. M. Dattelbaum, G. Gupta, S. K. Doorn, K. A. Velizhanin, Y. Teraoka, M. Chen, H. Htoon, M. Chhowalla, A. D. Mohite, Y. Takakuwa, "Valence-band electronic structure evolution of graphene oxide upon thermal annealing for optoelectronics", *Phys. Stat. Sol. (A)* **213**, 2380 (2016).
32. H. Kato, D. Tkeuchi, M. Ogura, T. Yamada, M. Kataoka, Y. Kimura, E. Sohu, C. E. Nebel and S. Yamasaki, "Heavily phosphorus-doped nanocrystalline diamond electrode for thermionic emission application", *Diam. Relat. Mater.* **63**, 165 (2016).
33. Y. Okigawa, W. Mizutani, K. Suzuki, M. Ishihara, T. Yamada and M. Hasegawa, "High performance of polymer organic light-emitting diodes on smooth transparent sheet with graphene films synthesized by plasma treatment", *Jpn. J. Appl. Phys.* **54**, 095103 (2015).
34. M. Onishi, I. Saito, K. Komiyama, W. Miyazaki, T. Masuzawa, A.T. T. Koh, D. H. C. Chua, T. Yamada, Y. Mori and K. OKano, Characterization of a-Se p-i-n junction fabricated using bidirectional electrolysis in NaCl(aq), *Phys. Stat. Solid. (A)* **212**, 2322 (2015).
35. T. Nakamura, T. Ebinam H. Nanjo, M. Hasegawa, M. Ishihara, T. Yamada, M. Horibe, M. Ameya, Y. Kato, "Preparation of Large-area Reduced Graphene Oxide–Smectite Composite Film and Its Electromagnetic Shielding Effectiveness", *Clay Sci.* (2015).
36. J. Cermak, T. Yamada, M. Ledinský, M. Hasegawa, B. Rezek, "Microscopically Inhomogeneous Electronic and Material Properties Arising during Thermal and Plasma CVD of Graphene", *J. Materi. Chem. C* **2**, 8939 (2014).
37. Y. Okigawa, R. Kato, T. Yamada, M. Ishihara, M. Hasegawa, "Electrical properties and domain sizes of graphene films synthesized by microwave plasma treatment under a low carbon concentration" *Carbon* **82**, 60 (2014).
38. R. Kato, K. Tsugawa, Y. Okigawa, M. Ishihara, T. Yamada and M. Hasegawa, "Bilayer graphene synthesis by plasma treatment of copper foils without using a carbon-containing gas", *Carbon* **77**, 823 (2014).
39. R. Kato, K. Tsugawa, T. Yamada, M. Ishihara and M. Hasegawa, "Improvement of multilayer graphene synthesis on copper substrate by microwave plasma process using helium at low-temperature", *Jpn. J. Appl. Phys.* **53**, 01555 (2013).
40. T. Masuzawa, I. Saito, T. Yamada, M. Onishi, H. Yamaguchi, Y. Suzuki, K. oonuki, N. Kato, S. Ogawa, Y. Takakuwa, A. T. T. Koh, D. H. C. Chua, Y. Mori, T. Shimosawa and K. Okano, "Development of an amorphous selenium-based photodetector driven by a diamond cold cathode", *Sensors* **13**,13744 (2013). **(Review)**
41. S. Ogawa, T. Yamada, S. Ishizuka, A. Yoshigoe, M. Hasegawa, Y. Takakuwa, "Graphene Growth and Carbon Diffusion Process During Vacuum Heating on Cu(111)/Al₂O₃ Substrates", *Jpn. J. Appl. Phys.* **52**, 110122 (2013).
42. Y. Okigawa, K. Tsugawa, T. Yamada, M. Ishiahra and M. Hasegawa, "Electrical characterization of graphene films synthesized by low-temperature microwave plasma chemical vapor deposition" *Appl. Phys. Lett.* **103**, 153106 (2013).

43. T. Masuzawa, M. Onishi, I. Saito, T. Yamada, A. T. T. Koh, D. H. C. Chua, S. Ogawa, Y. Takakuwa, Y. Mori and K. Okano, "High quantum efficiency UV detection using a-Se based photodetector", *Phys. Stat. Solid. Rapid Research Letters* **7**, 473 (2013).
44. T. Masuzawa, S. Kuniyoshi, M. Onishi, R. Kato, I. Saito, T. Yamada, A. T. T. Koh, D. H. C. Chua, T. Shimosawa and K. Okano, "Conditions for a carrier multiplication in amorphous-selenium based photodetector", *Appl. Phys. Lett.* **102**, 073506 (2013).
45. S. Ogawa, T. Yamada, S. Ishizuka, A. Yoshigoe, M. Hasegawa, Y. Teraoka and Y. Takakuwa, "Vacuum annealing formation of graphene on diamond (111) surface studied by real-time photoelectron spectroscopy", *Jpn. J. Appl. Phys.* **51**, 11PF02 (2012).
46. I. Saito, W. Miyazaki, M. Onishi, Y. Kudo, T. Masuzawa, T. Yamada, A. Koh, D. Chua, K. Soga, M. Overend, M. Aono, G. A. J. Amaratunga and K. Okano, "A transparent ultraviolet triggered amorphous selenium p-n junction", *Appl. Phys. Lett.* **98**, 152102 (2011).
47. T. Masuzawa, Y. Sato, Y. Kudo, I. Saito, T. Yamada, A. T. T. Koh, D. H. C. Chua, T. Yoshino, W. J. Chun, S. Yamasaki and K. Okano, "Correlation between low threshold emission and C-N bond in nitrogen-doped diamond films", *J. Vac. Sci. Technol. B* **29**, 02B119 (2011).
48. Y. Kudo, Y. Sato, T. Masuzawa, T. Yamada, I. Saito, T. Yoshino, W. J. Chun, S. Yamasaki and K. Okano, "Electron emission from N-doped diamond doped with dimethylurea", *J. Vac. Sci. Technol. B* **28**, 506 (2010).
49. H. Akasaka, T. Yamada and N. Ohtake, "Effect of film structure on field emission properties of nitrogen doped hydrogenated amorphous carbon film", *Diam. Relat. Mater.* **18** (2009) 423.
50. H. Yamaguchi, T. Masuzawa, S. Nozue, Y. Kudo, I. Saito, J. Koe, M. Kudo, T. Yamada, Y. Takakuwa and K. Okano, "Electron emission from conduction band of diamond with negative electron affinity", *Phys. Rev. B* **80**, 165321 (2009).
51. S. Kumaragurubaran, T. Yamada, S. Shikata, "Core level photoelectron spectroscopic study on oxidized phosphorus-doped (111) and (100) diamond surfaces after vacuum-annealing", *Jpn. J. Appl. Phys.* **48**, 011602 (2009).
52. Y. Kudo, T. Yamada, H. Yamaguchi, M. Masuzawa, I. Saito, S. Shikata, C. E. Nebel and K. Okano, "Field emission from surface modified P-doped diamond with different barrier height", *Jpn. J. Appl. Phys.* **47**, 8921 (2008).
53. S. Kumaragurubaran, T. Yamada and S. Shikata, "Vacuum annealing induced band bending of phosphorus-doped (111) diamond" *Diam. Relat. Mater.* **17**, 1969 (2008).
54. T. Masuzawa, Y. Shiraki, Y. Kudo, H. Yamaguchi, T. Yamada and K. Okano, "Clarification of band structure at metal-diamond contact using device simulation", *Appl. Surf. Sci.* **254**, 6285 (2008).
55. S. Shikata and T. Yamada, "Simulation of mechanical properties of diamond membrane for application to electron beam extraction window", *Diam. Relat. Mater.* **17**, 794 (2008).
56. H. Uetsuka, T. Yamada and S. Shikata, "ICP etching of polycrystalline diamonds: Fabrication of diamond nano-tips for AFM cantilevers", *Diam. Relat. Mater.* **17**, 728 (2008).
57. S. Kumaragurubaran, T. Yamada and S. Shikata, "Annealing effect of H- and O-terminated P-doped diamond (111) surface", *Diam. Relat. Mater.* **17**, 472 (2008).
58. H. Yamaguchi, I. Saito, Y. Kudo, T. Masuzawa, T. Yamada, M. Kudo, Y. Takakuwa and K. Okano, "Electron emission mechanism of hydrogenated natural type IIB diamond (111)", *Diam. Relat. Mater.* **17**, 162 (2008).
59. N. Kato, T. Masuzawa, Y. Kudo, Y. Kuwajima, H. Yamaguchi, K. Okano, T. Yamada, I. Saito, T. Butler, N. L. Rupasinghe and G. A. J. Amaratunga, "Sensitivity to red/green/blue illumination of amorphous selenium based photodetector driven by nitrogen-doped CVD diamond", *Diam. Relat. Mater.* **17**, 95 (2008).
60. C. E. Nebel, N. Yang, H. Uetsuka, T. Yamada and H. Watanabe, "Quantized electronic properties of diamond", *J. Appl. Phys.* **103**, 013712 (2008).
61. K. Okano, I. Saito, T. Mine, Y. Suzuki, T. Yamada, N. Rupasinghe, G. A. J. Amaratunga, W. I. Mile and D. R. T. Zahn, "Characterizations of a-Se based photodetectors using X-ray photoelectron spectroscopy and Raman spectroscopy", *J. Non-Crys. Sol.* **353**, 308 (2007).
62. H. Yamaguchi, T. Yamada, M. Kudo, Y. Takakuwa, and K. Okano "Electron emission mechanism of diamond characterized using combined XPS/UPS/FES system", *Appl. Phys. Lett.* **88**, 202101 (2006).
63. N. Kato, I. Saito, H. Yamaguchi, K. Okano, T. Yamada, T. Butler, N. L. Rupasinghe and G. A. J. Amaratunga, "Amorphous selenium based photodetector driven by field emission from N-doped diamond cathode", *J. Vac. Sci., Technol. B* **24**, 1035 (2006).
64. T. Takeuchi, H. Kato, G. S. Ri, T. Yamada, P. R. Vinod, C. E. Nebel, H. Okushi and S. Yamasaki, "Direct observation of negative electron affinity in hydrogen terminated diamond", *Appl. Phys. Lett.* **86**, 152103 (2005).

65. P. R. Vinod, T. Yamada, D. S. Hwang and N. Fujomori, "New fabrication technique of diamond Spindt type emitter array", *Jpn. J. Appl. Phys.* **44**, L497 (2005).
66. I. Saito, K. Onuki, T. Yamada, M. Aono, T. Butler, N. L. Rupesinghe, G. A. J. Amaratunga, W. I. Milne and K. Okano, "Anneal-induced degradation of amorphous selenium characterized by photoconductivity measurements", *Jpn. J. Appl. Phys.* **44**, L334 (2005).
67. K. Okano, T. Mine, I. Saito, H. Yamaguchi, T. Yamada and A. Sawabe, "Electron emission from heavily nitrogen-doped heteroepitaxial chemical vapor deposition diamond", *J. Vac. Sci. Technol.* **B22**, 1327 (2004).
68. S. Kono, T. Takano, T. Goto, Y. Ikejima, M. Shiraishi, T. Abukawa, T. Yamada and A. Sawabe, "Effect of bias-treatment in the CVD diamond growth on Ir(001)", *Diam. Relat. Mater.* **13**, 2081 (2004).
69. T. Mine, T. Yamada, H. Okamura, A. Sawabe, S. Koizumi and K. Okano, "Growth of N-doped diamond thin film on Ir for cold cathode", *phys. stat. sol. (a)* **199**, 33 (2003).
70. H. Yamaguchi, T. Mine, Y. Suzuki, T. Yamada, A. Sawabe and K. Okano, "Broad area emission from N-doped homoepitaxially grown diamond (111)", *J. Vac. Sci. Technol.* **B21**, 1730 (2003).
71. A. Sawabe, T. Yamada, H. Okamura, M. Katagiri and K. Suzuki, "Epitaxial growth of diamond thin films on Ir(001)/MgO(001) stacking by two-step dc plasma chemical vapor deposition and their characterizations", *New Diamond and Frontier Carbon Technology* **12**, 343 (2002).
72. K. Okano, T. Kamio, T. Yamada, A. Sawabe and S. Koizumi, "Electron emission from N-doped homo-epitaxially grown diamond", *J. Appl. Phys.* **92**, 2194 (2002).
73. J. Ishida, T. Yamada, A. Sawabe, K. Okuwada and K. Saito, "Large remanent polarization and coercive force by 100% 180 domain switching in epitaxial Pb(Zr_{0.5}, Ti_{0.5})O₃ capacitor", *Appl. Phys. Lett.* **80**, 467 (2001).
74. K. Iakoubovskii, A. Stesmans, K. Suzuki, A. Sawabe and T. Yamada, "Symmetry of the hydrogen-vacancy-like defect H1 in diamond", *Phys. Rev. B* **66** (2002) 113203.
75. K. Suzuki, H. Fukuda, T. Yamada and A. Sawabe, "Epitaxially Grown Free Standing Diamond Platelet", *Diam. Relat. Matter.* **10**, 2153 (2001).
76. K. Okano, T. Yamada, A. Sawabe, S. Koizumi, J. Itoh and G. A. J. Amaratunga, "Metal-insulator-vacuum type electron emission from N-containing chemical vapor deposited diamond", *Appl. Phys. Lett.* **79**, 275 (2001).
77. H. Maeda, T. Ifuku, S. Morooka, A. Kato, K. Okano and T. Yamada, "Formation of heteroepitaxially oriented (100) diamond thin films and their field emission properties", *Diamond Films and Technology* **8**, 331 (1999).
78. K. Okano, T. Yamada, A. Sawabe, S. Koizumi, R. Matsuda, C. Bandis, W. Chang and B. B. Pate, "Characterization of electron emission from N-doped diamond using simultaneous field emission and photoemission technique", *Appl. Sur. Sci.* **146**, 274 (1999).
79. K. Okano, A. Hiraki, T. Yamada, S. Koizumi and J. Itoh, "Electron emission from nitrogen-doped chemical vapour deposited diamond", *Ultramicroscopy* **73**, 43 (1998).
80. K. Okano, T. Yamada, H. Ishihara, S. Koizumi and J. Itoh, "Electron emission from nitrogen-doped pyramidal-shape diamond and its battery operation", *Appl. Phys. Lett.* **70**, 2201 (1997).

(2) 総説

1. 山田貴壽, 小川修一, "単層 CVD グラフェンの酸素ガスバリア特性", *膜* **43**, 92 (2022).
2. 小川修一, 山田貴壽, "並進運動エネルギーで誘起される O₂ 分子のグラフェン透過現象", *ニューダイヤモンド* **141**, 30 (2021).
3. 中島 秀朗, 森本 崇宏, 生田 美植, 沖川 侑揮, 山田 貴壽, 河原 憲治, 吾郷 浩樹, 岡崎 俊也, "ロックイン発熱解析法を用いた大面積グラフェン膜の欠陥構造イメージング", *ニューダイヤモンド* **130**, 9 (2018).
4. 山田 貴壽, 石原 正統, 長谷川 雅考, "低温プラズマ処理によるポリメタクリル酸メチルからのグラフェン形成", *ニューダイヤモンド* **114**, 6 (2014).
5. 長谷川雅考, 石原正統, 山田貴壽, 沖川侑揮, "グラフェンの低温プラズマ CVD と透明電極応用へのロードマップ", *プラズマ・核融合学会誌* **90**, 190 (2014).
6. 山田貴壽, 石原正統, 長谷川雅考, "マイクロ波プラズマ CVD 法を用いたグラフェンの量産技術", *月刊ディスプレイ* **19**, 73 (2013).
7. 山田貴壽, 石原正統, 長谷川雅考, "グラフェンの roll-to-roll 合成", *ニューダイヤモンド* **107**, 12 (2012).
8. 長谷川雅考, 金載浩, 石原正統, 山田貴壽, "大面積低温合成グラフェンの透明導電膜応用", *高分子* **61**, 473 (2012).

9. 小川修一, 山田貴壽, 石塚眞治, 吉越章隆, 長谷川雅考, 寺岡有殿, 高桑雄, "リアルタイム光電子分光によるグラフェン・オン・ダイヤモンド形成過程の観察", *表面科学* **33**, 44, (2012).
10. 石原正統, 津川和夫, 金載浩, 山田貴壽, 古賀義紀, 長谷川雅考, "ナノダイヤモンドコーティングの応用展", *電鍍・金型表面処理研究会誌*, (2012).
11. 長谷川雅考, 津川和夫, 石原正統, 金載浩, 山田貴壽, 古賀義紀, "ナノダイヤモンドコーティング", *精密工学会誌* **76**, 1324 (2010)
12. 太田亮, 上塚洋, 中村史, 嶋本伸雄, 青木幸広, 鹿田真一, 山田貴壽, 雨宮陽介, 畠山明子, 藤森直治, "ダイヤモンドナノ針—ナノ細胞マッピングに向けた取り組み—" *ニューダイヤモンド* **94**, 23 (2009) .
13. 山口尚登, 山田貴壽, 工藤政都, 高桑雄二, 岡野健, "窒素添加ダイヤモンドからの電界電子放出メカニズム解明に向けて—XPS/UPS/FES 複合分光システムによる評価—", *ニューダイヤモンド* **88**, 32 (2007) .
14. 山田貴壽, "ダイヤモンドの冷陰極応用", *ニューダイヤモンド* **86**, 33 (2007).
15. 山田貴壽, "ダイヤモンドによる電子線技術の新展開", *ニューダイヤモンド* **80**, 13 (2005).
16. 山田貴壽, 前出淳, 澤邊厚仁, "ヘテロエピタキシャルダイヤモンド薄膜からの電子放出特性", *ニューダイヤモンド* **54**, 30 (1999).
17. 岡野健, 山田貴壽, "気相成長ダイヤモンドからの電子放出", *表面科学* **17**, 724 (1996).
18. 山田貴壽, 岡野健, "高濃度窒素添加ダイヤモンド薄膜からの電子放出特性", *ニューダイヤモンド* **43**, 22 (1996).
19. 岡野健, 山田貴壽, "ダイヤモンドフラットパネル実現の可能性", *映像情報* **28**, (1996).

(3) 著書

1. 沖川侑揮, 山田貴壽, "第4章第3節 転写法を用いた CVD グラフェン/高温高压合成 h-BN の形成と電気特性", *グラフェンから広がる二次元物質の新技術と応用*, NTS 出版, 2020.
2. 山田貴壽, "5・7 グラフェン", *透明導電膜*, オーム社, 2014
3. 山田貴壽, 石原正統, 長谷川雅考, "13 グラフェンのロール to ロール合成", *セラミックデータブック編集委員会編 セラミックデータブック 2012*
4. 山田貴壽, 石原正統, 長谷川雅考, "第7章 プラズマ CVD 法によるグラフェンのロール to ロール合成", 齊木幸一郎監修"グラフェンの機能と応用展望 II".
5. 長谷川雅考, 金載浩, 石原正統, 山田貴壽, "第3章2 金属触媒低温プラズマ CVD と当面電極応用", 尾辻監修"グラフェンの最先端技術と応用展望"
6. 長谷川雅考, 石原正統, 山田貴壽, 金載浩, "第6章 グラフェンの透明電極応用", 尾辻監修 "グラフェンの最先端技術と応用展望"
7. 山田貴壽, "第13章 プロセス技術", 藤森直治, 鹿田真一 監修, "ダイヤモンドエレクトロニクスの最前線", シー・エム・シー出版