

High-Speed Electron Devices Using Advanced Structures and Materials

(浅田研究室分)

Journal Papers

1. A. Teranishi, K. Shizuno, S. Suzuki, M. Asada, H. Sugiyama, and H. Yokoyama, "Fundamental Oscillation up to 1.08 THz in Resonant Tunneling Diodes with High-Indium-Composition Transit Layers for Reduction of Transit Delay", *IEICE Electronics Express*, vol. 9, no. 5, pp. 385-390, Mar. 2012. (DOI: 10.1587/elex.9.385)
2. A. Teranishi, S. Suzuki, K. Shizuno, M. Asada, H. Sugiyama, and H. Yokoyama, "Estimation of Transit Time in Terahertz Oscillating Resonant Tunneling Diodes with Graded Emitter and Thin Barriers", *IEICE Trans. Electron.*, vol. E95-C, No. 3, pp. 401-407, Mar. 2012. (DOI: 10.1587/transele.E95.C.401)
3. H. Shibayama, S. Suzuki, M. Shiraishi, and M. Asada, "Dependence of Output Power on Slot Antenna Width in Terahertz Oscillating Resonant Tunneling Diodes", *J. Infrared Milli. Terahz. Waves*, vol. 33, pp. 475-478, Apr. 2012. (DOI: 10.1007/s10762-012-9893-y)
4. K. Ishigaki, M. Shiraishi, S. Suzuki, M. Asada, N. Nishiyama, and S. Arai, "Direct intensity modulation and wireless data transmission characteristics of terahertz-oscillating resonant tunnelling diodes," *Electron. Lett.*, vol. 48, no. 10, pp. 582-583, May 2012. (DOI: 10.1049/el.2012.0849)
5. 鈴木左文、鏑木新治、金谷英敏、浅田雅洋、「共鳴トンネルダイオードのテラヘルツ発振とレーザー光照射による出力の変調」*レーザー学会誌「レーザー研究」* vol. 40, no. 7, pp. 517-522, Jul. 2012.
S. Suzuki, S. Kaburaki, H. Kanaya, and M. Asada, "Terahertz Oscillation of Resonant Tunneling Diode and Modulation of Its Output Power with Laser Irradiation", *Rev. Laser Eng.*, vol. 40, no. 7, pp. 517-522, Jul. 2012.
6. H. Kanaya, H. Shibayama, R. Sogabe, S. Suzuki, and M. Asada, "Fundamental Oscillation up to 1.31 THz in Resonant Tunneling Diodes with Thin Well and Barriers", *Appl. Phys. Express*, vol. 5, 124101, Nov. 2012. (DOI: 10.1143/APEX.5.124101)
7. S. Suzuki, M. Shiraishi, H. Shibayama, and M. Asada, "High-Power Operation of Terahertz Oscillators with Resonant Tunneling Diodes Using Impedance-Matched

Antennas and Array Configuration”, IEEE J. Selected Topics Quantum Electron., vol. 19, no. 1, 8500108, Feb. 2013. (DOI: 10.1109/JSTQE.2012.2215017)

International Conferences

1. H. Kanaya, H. Shibayama, K. Shizuno, S. Suzuki, and M. Asada, “Increase in Output Power using Thin-Well Resonant Tunneling Diodes”, 3rd EOS Topical Meeting THz Science & Tech., Prague, Czech, Jun. 19, 2012.
2. H. Kanaya, H. Shibayama, K. Shizuno, S. Suzuki, and M. Asada, “Fundamental Oscillation up to 1.31 THz Using Thin-Well Resonant Tunneling Diodes”, Indium Phosphide Related Materials (IPRM 2012), Tu-1E.5, Santa Barbara, USA, Aug. 28, 2012.
3. M. Shiraishi, S. Suzuki, and M. Asada, “High-Power Operation of Terahertz Oscillators with Resonant Tunneling Diodes Using Offset-Fed Slot Antennas and Array Configuration”, Int. Conf. Infrared and Millimeter Waves & Terahertz Electronics (IRMMW-THz 2012), Thu-Pos-1, Wollongong, AUS, Sep. 27, 2012.
4. M. Asada and S. Suzuki, “Room-Temperature THz Oscillators Using Resonant Tunneling Diodes with Reduced Delay Times”, (Invited), Int. Symp. Frontiers THz Tech. (FTT 2012), WeP.2, Nara, JPN, Nov. 28, 2012.
5. H. Kanaya, S. Suzuki, and M. Asada, “Frequency increase in terahertz oscillating resonant tunneling diodes with keeping bias voltage by deep- and thin-well structure”, Int. Symp. Frontiers THz Tech. (FTT 2012), Pos1.14, Nara, JPN, Nov. 28, 2012.
6. S. Suzuki, K. Ishigaki, and M. Asada, “Dependence of bit error rate on received power in terahertz wireless communication using resonant-tunneling-diode oscillator”, Int. Symp. Frontiers THz Tech. (FTT 2012), Pos1.49, Nara, JPN, Nov. 28, 2012.
7. D. Take, M. Shirao, K. Maruyama, N. Nishiyama, M. Asada, and S. Arai, “Compact Optical/THz Signal Converter using Photo-generated Carrier Gate in THz Waveguide”, IEEE Photonics Conference (IPC 12), MS3, Burlingame, USA, Sep. 24, 2012.

Domestic Conferences

1. 武大助, 白尾瑞基, 丸山薫, 西山伸彦, 浅田雅洋, 荒井滋久, 「光励起キャリアゲート型光-テラヘルツ信号直接変換器の信号特性の検討」, 応用物理学

- 会講演会, 11p-B1-8, 松山, 2012年9月11日.
- D. Take, M. Shirao, K. Maruyama, N. Nishiyama, M. Asada, and S. Arai, "Signal Characteristics of Optical/THz Signal Converter using Photo-generated Carrier Gate", Nat. Conv. Rec., JSAP, 11p-B1-8, Matsuyama, Sep. 11, 2012.
2. 金谷英敏, 柴山裕孝, 鈴木左文, 浅田雅洋, 「厚いコレクタスペーサと狭井戸構造を持つ共鳴トンネルダイオードによる 1.31THz 基本波発振」, 応用物理学会講演会, 11p-B1-13, 松山, 2012年9月11日.
- H. Kanaya, H. Shibayama, S. Suzuki, and M. Asada, "Fundamental Oscillation up to 1.31 THz in Thick-Collector-Spacer Layer and Thin-Well Resonant Tunneling Diodes", Nat. Conv. Rec., JSAP, 11p-B1-13, Matsuyama, Sep. 11, 2012.
3. 金谷英敏, 柴山裕孝, 鈴木左文, 浅田雅洋, 「電子の遅延時間短縮による共鳴トンネルダイオードのテラヘルツ発振周波数上昇」, (招待講演) 応用物理学会講演会, 28p-D1-10, 厚木, 2013年3月28日.
- H. Kanaya, H. Shibayama, S. Suzuki, and M. Asada, "Frequency Increase in Terahertz Oscillation of Resonant Tunneling Diodes by Reduced Electron Delay Time", (Invited), Nat. Conv. Rec., JSAP, 28p-D1-10, Atsugi, Mar. 28, 2013.
4. 曾我部陸, 静野薫, 金谷英敏, 鈴木左文, 浅田雅洋, 杉山弘樹, 横山春喜, 「InAlGaAs/InP コンポジットコレクタを持つ共鳴トンネルダイオードを用いたテラヘルツ発振素子」, 応用物理学会講演会, 30a-PA3-9, 厚木, 2013年3月30日.
- R. Sogabe, K. Shizuno, H. Kanaya, S. Suzuki, M. Asada, H. Sugiyama, and H. Yokoyama, "Terahertz Oscillator using Resonant Tunneling Diodes with InAlGaAs/InP composite collector", Nat. Conv. Rec., JSAP, 30a-PA3-9, Atsugi, Mar. 30, 2013.

Meeting Reports

1. 鈴木左文, 浅田雅洋, 「電子デバイスを用いたテラヘルツ発生」, (招待講演) シリコン超集積化システム第165委員会, 東京, 2012年4月13日.
- S. Suzuki and M. Asada, "Terahertz Generation Using Electron Devices", (Invited), JSAP No. 165 Meeting, 2, Tokyo, Apr. 13, 2012.
2. 鈴木左文, 石垣要, 浅田雅洋, 「共鳴トンネルダイオード発振素子を用いたテラヘルツ無線伝送における誤り率の受信電力依存性」, テラヘルツ技術研究会, 沖縄, 2012年7月6日.
- S. Suzuki, K. Ishigaki, and M. Asada, "Dependence of Bit Error Rate on Received Power in Terahertz Wireless Communication Using Resonant-Tunneling-Diode

Oscillator”, Joint Meeting of JSAP Professional Group on THz Technology and IEICE Technology Group on THz Application Systems, 12, Okinawa, Jul. 6, 2012.

3. 金谷英敏, 曾我部 陸, 鈴木左文, 浅田雅洋, 「量子井戸の薄層化と深化による共鳴トンネルダイオードのテラヘルツ発振周波数上昇」, 電子情報通信学会電子デバイス研究会, 山形, 2012年12月18日.

H. Kanaya, R. Sogabe, S. Suzuki, and M. Asada, “Frequency Increase in Terahertz Oscillation of Resonant Tunneling Diodes by Thin and Deep Quantum Wells”, IEICE Technical Report of meeting on Electron Devices, ED2012-104, vol. 112, no. 364, pp. 63-67, Sendai, Dec. 18, 2012.

4. 鈴木左文, 浅田雅洋, “電子デバイスによるテラヘルツギャップ開拓ー共鳴トンネルダイオード発振素子とその無線通信応用ー”, (招待講演) 先端光・量子発生利用技術専門委員会第4回委員会/研究会, 仙台, 2012年12月10日.

S. Suzuki and M. Asada, “Development for terahertz gap by electron devices -Terahertz oscillating resonant tunneling diode and its characteristics of wireless communication-”, (Invited), IEE Technical Meeting, 1, Sendai, Dec. 17, 2012.