

## *Prof. Ohmi's Paper*

*January – December, 2006*

---

- E1174 (F) Ichiko Misumi, Satoshi Gonda, Tomizo Kurosawa, Yasushi Azuma, Toshiyuki Fujimoto, Isao Kojima, Toshihisa Sakurai, Tadahiro Ohmi and Kiyoshi Takamasu, "Reliability of parameters of associated base straight line in step height samples: Uncertainty evaluation in step height measurements using nanometrological AFM," Precision Engineering, Volume 30, Issue 1, pp.13-22, January 2006.
- E1175 (W) Tadahiro Ohmi, "New Paradigm of Semiconductor Industry," Proceeding of Lecture at National Chiao Tung University, January 2006.
- E1176 (F) Tadahiro Ohmi, Masaki Hirayama, and Akinobu Teramoto, "New era of silicon technologies due to radical reaction based semiconductor manufacturing," Journal of Physics D: Applied Physics, 39, R1-R17, January 2006.
- E1177 (W) T. Ohmi, "HIGH-PERFORMANCE THREE-DIMENSIONAL MISFET DEVICE FABRICATED BY USING DAMAGE-FREE PLASMA PROCESS TECHNOLOGY," THE 3rd INTERNATIONAL SYMPOSIUM ON SYSTEM CONSTRUCTION OF GLOBAL -NETWORK-ORIENTED INFORMATION ELECTRONICS (IGNOIE-COE05), Tohoku University, 21th Century COE Program, pp.77-91, January 2006.
- E1178 (F) Chuan Jie Zhong, Hiroaki Tanaka, Shigetoshi Sugawa and Tadahiro Ohmi, "High quality silicon nitride deposited by Ar/N<sub>2</sub>/H<sub>2</sub>/SiH<sub>4</sub> high-density and low energy plasma at low temperature," Microelectronics Journal, Vol.37, No.1 (2006), pp.44-49, (2006 Elsevier Ltd.) January 2006.
- E1179 (F) Kouji KOSAKA, Tetsuya IWABUCHI, Tetsuro BABA, Taishi ENDO, Hiroyuki HASHIGUCHI, Hiroyuki FURUKAWA, Yoshiya EGASHIRA, Seiji HASHIMOTO, Mutsumi TOUGE, Kiyohiko UOZUMI, Akira NAKADA, Hiroshi KUBOTA, and Tadahiro OHMI, "Wear Reduction Method for Frictionally Fast Feeding Piezoactuator," Japanese Journal of Applied Physics (JJAP) Part 1 Vol.45 No.2A, pp.1005-1011, February 2006.
- E1180 (W) T. Ohmi, HONORARY INVITED SPEAKER, "Where We Were and Where are going in the field of wet chemical processings of semiconductor industry," 2006 Semiconductor Pure Water and Chemicals Conference, CD-ROM, February 2006.
- E1181 (F) Akinobu Teramoto, Rihito Kuroda, Masanori Komura, Kazufumi Watanabe, Shigetoshi Sugawa and Tadahiro Ohmi, "Capacitance-Voltage Measurement Method for Ultrathin Gate Dielectrics Using LC Resonance Circuit," IEEE TRANSACTIONS ON SEMICONDUCTOR MANUFACTURING, VOL.19, NO.1, pp.43-49, February 2006.
- E1182 (F) Philippe Gaubert, Akinobu Teramoto, Tatsufumi Hamada, Masashi Yamamoto, Koji Kotani and Tadahiro Ohmi, "1/f Noise Suppression of pMOSFETs Fabricated on Si(100) and Si(110) Using an Alkali-Free Cleaning Process," IEEE TRANSACTIONS ON ELECTRON DEVICES, VOL.53, NO.4, pp.851-856, April 2006.

- E1183 (L) Zhibin Pan, Koji Kotani, and Tadahiro Ohmi, "Improved the law-of-cosines-based fast search method for vector quantization by updating angular information," Pattern Recognition Letters Vol.27, Issue 6, pp.688-695, April 2006.
- E1184 (F) Kaoru NAKAJIMA, Motofumi SUZUKI, Kenji KIMURA, Masashi YAMAMOTO, Akinobu TERAMOTO, Tadahiro OHMI and Takeo HATTORI, "Lattice Distortion at SiO<sub>2</sub>/Si(001) Interface Studied with High-Resolution Rutherford Backscattering Spectroscopy/Channeling," Japanese Journal of Applied Physics Vol.45, No.4A, pp. 2467-2469, April 2006.
- E1185 (F) Weitao CHENG, Akinobu TERAMOTO, Masaki HIRAYAMA, Shigetoshi SUGAWA and Tadahiro OHMI, "Impact of Improved High-Performance Si(110)-Oriented Metal-Oxide-Semiconductor Field-Effect Transistors Using Accumulation-Mode Fully Depleted Silicon-on-Insulator Devices," Japanese Journal of Applied Physics Vol. 45, No. 4B, pp. 3110-3116, April 2006.
- E1186 (F) Ichirou TAKAHASHI, Hiroyuki SAKURAI, Tatsunori ISOGAI, Masaki HIRAYAMA, Akinobu TERAMOTO, Shigetoshi SUGAWA and Tadahiro OHMI, "Relationship between Sr<sub>2</sub>(Ta<sub>1-x</sub>Nb<sub>x</sub>)<sub>2</sub>O<sub>7</sub> Crystal Phase and RF-Sputtering Plasma Condition for Metal-Ferroelectric-Insulator-Si Structure Device Formation," Japanese Journal of Applied Physics Vol.45, No.4B, pp. 3207-3212, April 2006.
- E1187 (F) TAKAHIRO NAKAYAMA, MASAHIRO KONDA, KOJI TAKEUCHI, KOJI KOTANI, AND TADAHIRO OHMI, "STILL IMAGE COMPRESSION WITH MEAN-RESIDUAL DOMAIN ADAPTIVE RESOLUTION VECTOR QUANTIZATION TECHNUQUE," Intelligent Automation and Soft Computing, Vol. 12, No.3, pp. 231-243, May 2006.
- E1188 (F) TAKAHIRO NAKAYAMA, KOJI TAKEUCHI, MASAHIRO KONDA, KOJI KOTANI, AND TADAHIRO OHMI, "IMAGE SCRAMBLING METHOD FOR INFORMATION DISTRIBUTION VIA VECTOR QUANTIZATION CODEBOOK PROCESSING," Intelligent Automation and Soft Computing, Vol. 12, No.3, pp. 245-256, May 2006.
- E1189 (F) KOJI KOTANI, QIU CHEN, FEIFEI LEE, AND TADAHIRO OHMI, "REGION-DIVISION VECTOR QUANTIZATION HISTGRAM METHOD FOR HUMAN FACE RECOGNITION," Intelligent Automation and Soft Computing, Vol. 12, No.3, pp. 257-268, May 2006.
- E1190 (F) ZHIBIN PAN, TADAHIRO OHMI, and KOJI KOTANI, "AN EFFICIENT METHOD OF CONSTRUCTING L1-TYPE NORM FEATURE TO ESTIMATE EUCLIDEAN DISTANCE FOR FAST VECTOR QUANTIZATION," Intelligent Automation and Soft Computing, Vol. 12, No.3, pp. 269-274, May 2006.
- E1191 (F) ZHIBIN PAN, TADAHIRO OHMI, and KOJI KOTANI, "POST-PROCESSING METHOD FOR VECTOR QUANTIZATION TO ACHIEVE A HIGHER PSNR AND NEARLY CONSTANT BIT RATE," Intelligent Automation and Soft Computing, Vol. 12, No.3, pp. 275-282, May 2006.
- E1192(C) Rihito Kuroda, Kazufumi Watanabe, Akinobu Teramoto, Michihiko Mifuji, Takahisa Yamaha, Shigetoshi Sugawa and Tadahiro Ohmi, "Accurate Circuit Performance Prediction Model and Lifetime Prediction Method of NBT Stressed Devices for Highly Reliable ULSI Circuits," 2006 International Conference on Integrated Circuit Design and Technology, Invited Paper, pp.199-202, May 2006.

- E1193(C) Zhibin Pan, Koji Kotani, and Tadahiro Ohmi, "Fast Encoding Method for Vector Quantization Based on Sorting Elements of Codewords to Adaptively Constructing Subvectors," 2006 IEEE International Symposium on Circuits and Systems (ISCAS2006), pp. 4687-4690, May 2006.
- E1194(F) Hitoshi Morinaga, Kenji Shimaoka, and Tadahiro Ohmi, "Impact of Light on the Surface Nanostructure of Silicon," Journal of The Electrochemical Society Volume153, Number 7, pp.626-631, May 2006.
- E1195-1 (C) Yasuhiro Kawase, Masafumi Kitano, Hitoshi Morinaga, Yasuyuki Shirai and Tadahiro Ohmi, "An outgas free passivation technology for semiconductor vacuum chamber using advanced anodic oxidation," The 209th Electrochemical Society Meeting, No.317, May 2006.
- E1195-2 (P) Yasuhiro Kawase, Masafumi Kitano, Fumikazu Mizutani, Hitoshi Morinaga, Yasuyuki Shirai and Tadahiro Ohmi, "An Outgas Free Passivation Technology for Semiconductor Vacuum Chamber Using Advanced Anodic Oxidation," Electrochemical Society Transactions Vol.9 No.2, pp.67-71, August 2007.
- E1196(C) Koutarou Tanaka, Hiroaki Tanaka, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "High Quality Gate Insulator Film Formation on SiC using by Microwave-Excited High-Density Plasma," 14th Workshop on Dielectrics in Microelectronics (WoDiM2006), pp.111-112, June 2006.
- E1197-1(W) Koutarou Tanaka, Hiroaki Tanaka, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "The Dependence of Remaining Carbon in the Electrical Property of the Gate Insulator Film on SiC at Low Temperature Insulator Formation," 2006 Asia-Pacific Workshop on Fundamental and Application of Advanced Semiconductor Devices, pp.155-159, July 2006.
- E1197-2(W) Koutarou Tanaka, Hiroaki Tanaka, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "The Dependence of Remaining Carbon in the Electrical Property of the Gate Insulator Film on SiC at Low Temperature Insulator Formation," IEICE Technical Report on Trans. Electron Devices, Vol. 106, No.137, ED2006-96, pp. 155-159, July 2006.
- E1198-1(W) Masaaki Higuchi, Seiji Shinagawa, Akinobu Teramoto, Hiroshi Nohira, Takeo Hattori, Eiji Ikenaga, Shigetoshi Sugawa, Tadahiro Ohmi, "The dependence of the intermediate nitridation states density at Si<sub>3</sub>N<sub>4</sub>/Si interface on surface Si atoms density," 2006 Asia-Pacific Workshop on Fundamental and Application of Advanced Semiconductor Devices, pp.265-270, July 2006.
- E1198-2(W) Masaaki Higuchi, Seiji Shinagawa, Akinobu Teramoto, Hiroshi Nohira, Takeo Hattori, Eiji Ikenaga, Shigetoshi Sugawa, Tadahiro Ohmi, "The dependence of the intermediate nitridation states density at Si<sub>3</sub>N<sub>4</sub>/Si interface on surface Si atoms density," IEICE Technical Report on Trans. Electron Devices, Vol. 106, No.137, ED2006-118, pp. 265-270, July 2006.
- E1199-1(C) PHILIPPE GAUBERT, AKINOBU TERAMOTO, TATSUFUMI HAMADA, TOMOYUKI SUWA and TADAHIRO OHMI, "Accurate Extraction of Conduction Parameters in MOSFETs on Si(110) surface," 28<sup>th</sup> International Conference on the Physics of Semiconductors, pp.243, July 2006.
- E1199-2(P) P. GAUBERT, A. TERAMOTO, T. HAMADA, T. SUWA and T. OHMI, "Accurate Extraction of Conduction Parameters in MOSFETs on Si(110) surface," 28<sup>th</sup> International Conference on the Physics of Semiconductors, pp.1393-1394, CD-ROM, July 2006.

- E1200(C) Ichirou Takahashi, Tatsunori Isogai, Keita Azumi, Akinobu Teramoto, Shigetoshi Sugawa, Tadahiro Ohmi, "Formation of Metal-Ferroelectric-Insulator-Si Structure Device with Large Memory Window by Supplying Ion Bombardment Energy in Rf-Sputtering Plasma," 15<sup>th</sup> International Symposium on the Applications of Ferroelectrics, pp.242, August 2006.
- E1201 (F) Kazumasa Kawase, Tomoyuki Suwa, Masaaki Higuchi, Hiroshi Umeda, Masao Inoue, Shimpei Tsujikawa, Akinobu Teramoto, Takeo Hattori, Shigetoshi Sugawa and Tadahiro Ohmi, "Control of Nitrogen Depth Profile near Silicon Oxynitride/Si(100) Interface Formed by Radical Nitridation," Japanese Journal of Applied Physics Vol. 45, No. 8A, pp. 6203-6209, August 2006.
- E1202(W) Qiu Chen, Koji Kotani, Feifei Lee, and Tadahiro Ohmi, "Accurate Eye Detection Using Elliptical Separability Filter," Proceedings of The Eighth IASTED International Conference on Signal and Image Processing (SIP 2006), 534-124, CD-ROM, August 2006.
- E1203(W) Feifei Lee, Koji Kotani, Qiu Chen, and Tadahiro Ohmi, "Robust Video-shot-change Detection by Adaptive-threshold Based on APIDQ Histogram Method," Proceedings of The Eighth IASTED International Conference on Signal and Image Processing (SIP 2006), 534-125, CD-ROM, August 2006.
- E1204 (C) Ichirou Takahashi, Kiyoshi Funaiwa, Keita Azumi, Satoru Yamashita, Yasuyuki Shirai, Masaki Hirayama, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "Formation of Ferroelectric Sr<sub>2</sub>(Ta<sub>1-x</sub>Nb<sub>x</sub>)<sub>2</sub>O<sub>7</sub> Thin Film on Amorphous SiO<sub>2</sub> by Microwave-Excited Plasma Enhanced Metalorganic Chemical Vapor Deposition," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.124-125, September 2006.
- E1205 (C) Tomoyuki Suwa, Hiroto Takahashi, Yuki Kumagai, Genya Fujita, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "Very Low Bit Error Rate in Flash Memory using Tunnel Dielectrics formed by Kr/O<sub>2</sub>/NO Plasma Oxynitridation," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.296-297, September 2006.
- E1206 (C) Masaaki Higuchi, Takashi Aratani, Tatsufumi Hamada, Akinobu Teramoto, Takeo Hattori, Shigetoshi Sugawa, Tadahiro Ohmi, Seiji Shinagawa, Hiroshi Nohira, Eiji Ikenaga, Keisuke Kobayashi, "Electric characteristics of Si<sub>3</sub>N<sub>4</sub> films formed by directly radical nitridation on Si (110) and Si (100) surfaces," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.386-387, September 2006.
- E1207 (C) Hiroshi Imai, Akinobu Teramoto, Shigetoshi Sugawa and Tadahiro Ohmi, "Low Leakage Current and Low Resistivity p+n Diodes on Si(110) Fabricated by Ga<sup>+</sup>/B<sup>+</sup> Combination I/I and Low Temperature Annealing," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.454-455, September 2006.
- E1208 (C) Syunichi Watabe, Shigetoshi Sugawa, Akinobu Teramoto, and Tadahiro Ohmi, "A New Statistical Evaluation Method for the Variation of MOSFETs," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.532-533, September 2006.

- E1209 (C) Ichirou Takahashi, Tatsunori Isogai, Keita Azumi, Masaki Hirayama, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "Technology of Ferroelectric Thin Film Formation with Large Coercive Field for Future Scaling Down of Ferroelectric Gate FET Memory Device," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.554-555, September 2006.
- E1210 (C) Toru Takeda, Kouji Tanaka, Masaki Saito, Yoshimichi Kato, Toshirou Tsumori, Herzl Aharoni, and Tadahiro Ohmi, "Low temperature (300°C) growth of crystalline/non-crystalline thin Si films by a newly developed single shower dual injection system employing microwave excited high density hydrogen plasma and silicon radicals CVD process," Extended Abstracts of the 2006 International Conference on SOLID STATE DEVICES and MATERIALS, pp.1096-1097, September 2006.
- E1211 (C) Soji Fukuda, Tadahiro Ohmi, Shigetoshi Sugawa, "Development and Practical Application of High-efficiency Fire Control System for the Clean Room," International Symposium on Semiconductor Manufacturing (ISSM 2006), ES-254, pp.243-246, September 2006.
- E1212 (C) S.Minobe, I.Terada, Y. Motoyoshi, H. Hanaoka, Y. Shirai, T. Ohmi, "A New Air Cleaning and Cooling Instrument Using Oblique Honeycomb," International Symposium on Semiconductor Manufacturing (ISSM 2006), UC-157, pp.417-420, September 2006.
- E1213-1(C) Hitoshi Morinaga, Kenji Shimaoka, and Tadahiro Ohmi, "Surface Microroughness of Silicon in Wet Process and Its Minimization," 8<sup>th</sup> International Symposium on Ultra Clean Processing of Silicon Surfaces(UCPSS 2006), Abstract Book, pp. 18-19, September 2006.
- E1213-2 (P) Hitoshi Morinaga, Kenji Shimaoka, and Tadahiro Ohmi, "Surface Microroughness of Silicon in Wet Process and Its Minimization," Solid State Phenomena, Vol.134, pp.45-48, November 2007.
- E1214 (F) T.N.Minh, K.Ohishi, M.Tanaka, S.Hashimoto, K.Kosaka, H.Kubota, and T.Ohmi, "Continuous Path Tracking System of High Precision Stage Using Synchronous Piezoelectronic Device Driver," Advanced Materials Research Vol.11-12, pp.121-124, October 2006.
- E1215 (F) Ichirou Takahashi, Keita Azumi, Masaki Hirayama, Akinobu Teramoto, Shigetoshi Sugawa and Tadahiro Ohmi, "Fabrication of Pt/Sr<sub>2</sub>(Ta<sub>1-x</sub>Nb<sub>x</sub>)<sub>2</sub>O<sub>7</sub>/IrO<sub>2</sub>/SiO<sub>2</sub>/Si Device with Large Memory Window and Metal-Ferroelectric-Metal-Insulator-Si Field-Effect Transistor," Japanese Journal of Applied Physics Vol. 45, No. 9B, pp. 7336-7340, October 2006.
- E1216 (L) K.Hirose, M.Kihara, D.Kobayashi, H.Okamoto, S.Shinagawa, H.Nohira, E.Ikenaga, M.Higuchi, A.Teramoto, S.Sugawa, T.Ohmi, and T.Hattori, "X-ray photoelectron spectroscopy study of dielectric constant for Si compounds," Applied Physics Letters 89 Number 15, 154103-1-154103-3, October 2006.
- E1217 (F) Zhibin Pan, Koji Kotani, and Tadahiro Ohmi, "Comments on: Novel full-search schemes for speeding up image coding using vector quantization," Journal of Visual Communication & Image Representation R.17, pp.573-580, October 2006.
- E1218 (W) W. Cheng, A. Teramoto, R. Kuroda, P. Gaubert, C. Tye, M. Hirayama, S. Sugawa and T. Ohmi, "High Performance and Highly Reliable Novel CMOS Devices Using Accumulation Mode Fully Depleted SOI MOSFETs," Technical Report of IECE, Vol.106 No.277, SDM2006-188, pp.57-61, October 2006.

- E1219(C) Weitao Cheng, Akinobu Teramoto, Philippe Gaubert, Masaki Hirayama and Tadahiro Ohmi, "Impact of Improved Mobility and Low Flicker Noise MOS Transistors Using Accumulation Mode Fully Depleted Silicon-on-Insulator Devices," 2006 8<sup>th</sup> International Conference on Solid-State and Integrated Circuit Technology Proceedings, Part 1 of 3, pp.65-67, October 2006.
- E1220(F) Kazuo Ohtsubo, Yuji Saito, Masaki Hirayama, Shigetoshi Sugawa, Herzl Aharoni, Tadahiro Ohmi, "Thin SiON Film Grown at Low-Temperature (400 °C ) by Microwave-Excited High-Density Kr/O<sub>2</sub>/N<sub>2</sub> Plasma," IEEE Transactions on Plasma Science Vol.34 No.5, pp. 2443-2449, October 2006.
- E1221(W) Tadahiro Ohmi, Akinobu Teramoto, Rihito Kuroda, and Naoto Miyamoto, "Revolutional Progress of Silicon Technologies Exhibiting Very High Speed Performance Over 50 Ghz Clock Rate," The 6<sup>t</sup> h Taiwan-Japan Microelectronics International Symposium, November 2006.
- E1222(C) Md.Ashfaquzzaman Khan, Naoto Miyamoto, Roel Pantonial, Koji Kotani, Shigetoshi Sugawa, and Tadahiro Ohmi, "Improving Multi-Context Execution Speed on DRFPGAs," IEEE Asian Solid-State Circuits Conference (A-SSCC) 2006, pp.275-278, November 2006.
- E1223(C) Kazumasa Kawase, Masaaki Higuchi, Tomoyuki Suwa, Hiroshi Umeda, Masao Inoue, Akinobu Teramoto, Takeo Hattori, Shigetoshi Sugawa, and Tadahiro Ohmi, "Radical Oxidation on Ultra Pure Silicon Surface," 210<sup>th</sup> Meeting of The Electrochemical Society, pp. 973, November 2006.
- E1224(F) Ichirou Takahashi, Hiroyuki Sakurai, Tatsufumi Isogai, Akinobu Teramoto, Shigetoshi Sugawa, and Tadahiro Ohmi, "Low Voltage 3V Operation of Ferroelectrics Multi-Layer Stack MFIS Structure Device Formed by Plasma Physical Vapor Deposition and Oxygen Radical Treatment," Integrated Ferroelectrics, Vol.81, No.1, pp.47-55, November 2006.
- E1225(C) Masaaki Higuchi, Tomoyuki Suwa, Takashi Aratani, Tatsufumi Hamada, Akinobu Teramoto, Takeo Hattori, Shigetoshi Sugawa, Tadahiro Ohmi, Seiji Shinagawa, Hiroshi Nohira, Eiji Ikenaga, "Electric and interface characteristics of Si<sub>3</sub>N<sub>4</sub> films formed by directly radical NH on Si (110) and Si (100) surfaces," 37<sup>th</sup> IEEE Semiconductor Interface Specialists Conference, pp.13, December 2006.
- E1226(C) Qiu Chen, Koji Kotani, Feifei Lee, and Tadahiro Ohmi, "Face Recognition Using Codebook designed by Code Classification," The first IEEE International Conference on Signal and Image Processing – 2006, pp.397-401, December 2006.
- E1227(C) Feifei Lee, Koji Kotani, Qiu Chen, and Tadahiro Ohmi, "Shot Change Detection Using Adjacent Pixel Intensity Difference Quantization Histogram Method in MPEG Compressed Video," The first IEEE International Conference on Signal and Image Processing – 2006, pp.637-642, December 2006.
- E1228(C) Zhibin Pan, Koji Kotani, and Tadahiro Ohmi, "Constructing Better Partial Sums Based on Energy-Maximum Criterion for Fast Encoding of VQ," Proceedings of 2006 IEEE Asia Pacific Conference on Circuits and Systems, pp.1565-1568, December 2006.
- E1229 (F) Zhibin PAN, Koji KOTANI, and Tadahiro OHMI, "Subvector-Based Fast Encoding Method for Vector Quantization Without Using Two Partoial Variances," OPTICAL REVIEW Vol.13. No.6 (2006), pp.410-416, November /December 2006.