

References

Chapter 1

- [1]. R. Dat and H. D. Shih, "An overview of various techniques for preparation of ferroelectric thin films for device applications" *Integrated Thin Films and Applications*.
- [2]. E. C. Subbarao, *J. Phys. Chem. Solids*, 23, 665 (1962).
- [3]. Hidemi Takasu, *Microelectronic Engineering*, 59, 237 (2001).
- [4]. J. L. Moll and Y. Tarui: *IEEE Trans Electron Devices* ED-10, 38 (1963).
- [5]. Y. Nakao, T. Nakamura, A. Kamisaw and H. Takasu, *Integrated Ferroelectrics*, 6, (1995) 23.
- [6]. E. Tokumitsu, G. Fujii and H. Ishiwara, *Appl. Phys. Lett.* 75, 575 (1999).
- [7]. Masayuki Suzuki, "Review on future ferroelectric nonvolatile memory: FeRAM" *J. Ceram. Soc. Jpn. Int. Ed.*, 103, 1088 (1995).
- [8]. S.A. Cambell, D. C. Gilmer, X. Wang, M. T. Hsich, H. S. Kim, W. L. Gladfelter, and J. H. Yan, *IEEE Trans. Electron Devices* 44, 104 (1997).
- [9]. C. J. Taylor, D. C. Gilmer, D. Colombo, G. D. Wilk, S. A. Cambell, J. Roberts, and W. L. Gladfelter, *J. Am. Chem. Soc.* 121, 5220 (1999).
- [10]. R. B. van Dover, *Appl. Phys. Lett.* 74, 3041 (1999).
- [11]. M. Copel, M. A. Gribelyuk, and E. Gusev, *Appl. Phys. Lett.* 76, 436 (2000).
- [12]. T. Ngai, W. J. Qi, R. Sharma, J. Fretwell, X. Chen, J. C. Lee, and S. Banerjee, *Appl. Phys. Lett.* 76, 502 (2000).
- [13]. M. Houssa, M. Tuominen, M. Naili, V. Afanas's, A. Stesmans, S.

- Haukka, and M. M. Heyns, *J. Appl. Phys.* 89, 8615 (2000).
- [14]. R. S. Smith, N. Hoilien, C. J. Taylor, T. Z. Ma, S. A. Campbell, J. T. Roberts, M. Copel, D. A. Buchanan, M. Gribelyuk, and W. L. Gladfelter, *J Electrochem. Soc.* 147, 3472 (2000).
- [15]. B. H. Lee, L. Kang, R. Nieh, W. J. Qi, and J. C. Lee, *Appl. Phys. Lett.* 76, 1926 (2000).
- [16]. L. Kang, B. H. Lee, W. J. Qi, Y. Jeon, R. Nieh, S. Gopalan, K Onishi, and J. C. Lee, *IEEE Electron Device Lett.* 21, 181 (2000).
- [17]. M. A. Russack, C. V. Jahnes, and E. P. Katz, *J. Vac. Sci. Technol. A* 7, 1248 (1989).
- [18]. G. D. Wilk and R. M. Wallace, *Appl. Phys. Lett.* 74, 2854 (1999).
- [19]. G. D. Wilk and R. M. Wallace, *Appl. Phys. Lett.* 76, 112 (2000).
- [20]. G. D. Wilk, R. M. Wallace, and J. M. Anthony, *J. Appl. Phys.* 87, 484 (2000).



Chapter 2

- [21]. Smolenskii G. A., and Kozhevnikova N. V., *Dokl. Akad. Nauk. SSSR*, 75,519 (1951).
- [22]. Aurivillius B., *ark. Kemi* 1, p.463,(1949).
- [23]. T. Atsuki, N. Soyama, T. Yonezawa and K. Ogi, “ Preparation of Bi-base ferroelectric thin films by sol-gel method ” *Jpn. J. Appl. Phys.*, 34, 5096 (1995).
- [24]. T. Noguchi, T. Haes and Y. Miyasaka, “ Analysis of the dependence of ferroelectric properties of strontium bismuth tantalate (SBT) thin films on the composition and process temperature” *Jpn. J. Appl. Phys.*, 35, 4900 (1996).
- [25]. T. Hase, T. Noguchi, K. Amanum and Y. Miyaska, “ Sr content

- dependence of ferroelectric properties in $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films” *Integ. Ferro.*, 15, 127 (1997).
- [26] T. Hase, T. Noguchi, K. Takemura and Y. Miyaska, “ Imprint characteristics of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films with modified Sr composition” *Jpn. J. Appl. Phys.*, 37, 5198 (1998).
- [27]. A. Li, D. Wu, H. Ling, T. Yu, M. Wang, X. Yin, Z. Liu, N. Ming, ” Effect of excess of bismuth on the microstructures and electrical properties of strontium bismuth tantalate (SBT) thin films” *Thin Solid Films*, 375, 215 (2000).
- [28]. T-C. Chen, T. Li, X. Zhang and S. B. Desu, “ The effect of excess bismuth on the ferroelectric properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films” *J. Mater. Res.*, 12, 1569 (1997).
- [29]. I. Koiwa, Y. Okada, J. Mita, A. Hashimoto and Y. Sawada, “ Role of excess Bi in $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin film prepared using chemical liquid deposition and sol-gel method” *Jpn. J. Appl. Phys.*, 36, 5904 (1997).
- [30]. T. Osaka, A. Sakakibara, T. Seki, S. Ono, I. Koiwa and A. Hashimoto, “Phase transition in ferroelectric $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films with change of heat-treatment temperature” *Jpn. J. Appl. Phys.*, V37, 597 (1998).
- [31]. M. A. Rodriguez, T. J. Boyle, C. D. Buchheit, R. G. Tissot, C. A. Drewien, B. A. Hernandez and M. O. Eatouhh, “Phase formation and characterization of the $\text{SrBi}_2\text{Ta}_2\text{O}_9$ layered-perovskite ferroelectric” *Integ. Ferro.*, 14, 210 (1997).
- [32]. H. Watanabe, T. Mihara, H. Yoshimori and C. A. P. de Araujo, “ Preparation of ferroelectric thin films of bismuth layer structured compounds” *Jpn. J. Appl. Phys.*, 34, 5240 (1995).
- [33]. K. Miura and M. Tanaka, ” Difference in the electronic structure of

- SrBi₂Ta₂O₉ and SrBi₂Nb₂O₉” Jpn. J. Appl. Phys., 37, 606 (1998).
- [34]. G. H. Haertling, “Ferroelectric ceramics: history and technology” J. Am. Ceram. Soc., 82, 797 (1999).
- [35]. B. I. Lee and E. J. Pope, “Chemical processing of ceramics” published by Marcel Dekker, Inc., New York, (1994).
- [36]. Bradley, D. C., Mehrotra, R. C. and Gaur D. P.,” Metal alkoxides” Academic Press, London (1978).
- [37]. Guanghua Yi and Michael Sayer, “ Sol-gel processing of complex oxide films” Ceram. Bull., 70,1173 (1991).
- [38]. K. S. Lee, D. S. Sohn, S. H. Hong, W. I. Lee, Y. T. Kim, H. K. Chae, I. Chung, “ Sol-gel precursor effect on the formation of ferroelectric strontium bismuth tantalate thin films” Thin Solid films, 394, p.142 (2001).
- [39]. T. Hayashi, T. Hara and H. Takahashi, “ Preparation and dielectric properties of SrBi₂Ta₂O₉ thin films by sol-gel method” Jpn. J. Appl. Phys., 36, 5900 (1997).
- [40] T. Hayashi, T. Hara and S. Sawayanagi, “ Preparatiion and dielectric properties of SrBi₂Ta₂O₉ thin films by sol-gel method” J. Eur.Ceram. Soc., 19, 1497 (1999).
- [41]. Y. Kim, H. K. Chae, K. S. Lee and W. I. Lee, ” Preparation of SrBi₂Ta₂O₉ thin films with a single alkoxide sol-gel precursor” J. Mater. Chem., 8, 2317 (1998).
- [42]. K. kako, C. Zheng, J. M. Finder and S. K. Dey, “ Sol-gel route to ferroelectric layer-structured perovskite SrBi₂Ta₂O₉ and SrBi₂Nb₂O₉ thin films” J. Am. Ceram. Soc., 81, 1869 (1998).
- [43]. K. kako, C. Zheng, J. M. Finder and S. K. Dey, “ Formation of

- complex alkoxides to control layer structure in Sr-Bi-M-O (M: Ta or Nb) perovskite thin films” J. Mater. Sci.: Mater. In Elec.,9, 457 (1998).
- [44]. Kazumi Kato, “ Low-temperature synthesis of SrBi₂Ta₂O₉ ferroelectric thin films through the complex alkoxide method: effects of functional group, hydrolysis and water vapor treatment” Jpn. J. Appl. Phys., 37, 5178 (1998).
- [45]. S. M. Zanetti, P. R. Bueno, E. Leite and E. Longo, “ Ferroelectric and microstructural characteristics of SrBi₂Ta₂O₉ thin films crystallized by the rapid thermal annealing process” J. Appl. Phys., 89,3416 (2001).
- [46]. S. M. Zanetti, E. Leite and E. Longo, “ Preparation and characterization of SrBi₂Nb₂O₉ thin films made by polymeric precursors” J. Mater. Res., 13, 2932 (1998).
- [47]. S-I. Ohfujii and M. Itsumi, “ Effects of annealing in Ar gas on ferroelectric properties of SrBi₂Ta₂O₉ thin films” Jpn. J. Appl. Phys., 37, 2559 (1998).
- [48]. P. Y. Chu, R. E. Jones, Jr., P. Zurcher, D. J. Taylor, B. Jing and S. J. Gillespie, ” Characteristics of spin-on ferroelectric SrBi₂Ta₂O₉ thin film capacitors for ferroelectric random access memory applications” J. Mater. Res., 11, 1065 (1996).
- [49]. S. B. Desu and T. Li, “ Fatigue-free SrBi₂(Ta_xNb_{1-x})₂O₉ ferroelectric thin films” Mater. Sci. and Eng., B34, L4-8 (1995).
- [50]. Q. F. Zhou, H. L. W. Chan, C. L. Choy, “ Synthesis and properties of ferroelectric SrBi₂Ta₂O₉ powder and films prepared by a sol-gel process” J. Non-Cry. Sol., 254, 106 (1999).
- [51]. Z. G. Zhang, J. S. Liu, Y. N. Wang, J. S. Zhu, J. L. Liu, D. Su and H.

- M. Shen, " Structure and voltage dependence of ferroelectric properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films" J. Appl. Phys., 85, 1746 (1999).
- [52]. T. J. Boyle, C. D. Buchheit, M. A. Rodriguez, H. N. Al-Shareef and B. A. Hernandez, " Formation of $\text{SrBi}_2\text{Ta}_2\text{O}_9$: Part I. Synthesis and characterization of a novel "sol-gel" solution for production of ferroelectric $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films" J. Mater. Res., 11, 2274 (1996).
- [53]. Z. Zhang, J. Zhu, D. Su, J. Liu, H. Shen, Y. Wang, L. Kang, J. Zhou, S. Yang, P. Wu, " Laser annealing of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films" Thin Solid Films, 375, 172 (2000).
- [54]. S-H. Kim, D. J. Kim, S. K. Streiffer, J-p. Maria and A. L. Kingon, " Ferroelectric properties of SBT ($\text{Sr/Bi/Ta}=0.8/2.3/2$) thin films using a novel chemical solution deposition" Mat. Res. Soc. Symp. Proc., 541, 223 (1999).
- [55]. Y. Wu, F. S. Ohuchi and G. Z. Cao, " Synthesis and dielectric properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ layered perovskites by sol-gel processing" Mat. Res. Soc. Symp. Proc., 541, 253 (1999).
- [56]. C. D. E. Lakeman and T. J. Boyle, " Chemical solution processing of strontium bismuth tantalate" Mat. Res. Soc. Symp. Proc., 541, 259 (1999).
- [57]. M. Grossmann, O. Lohse, D. Bolten and R. Waser, " Origin of imprint in ferroelectric CSD $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films" Mat. Res. Soc. Symp. Proc., 541, 269 (1999).
- [58]. J. D. Park, T. S. Oh, J. H. Lee and J. Y. Park, " Ferroelectric characteristics of liquid source misted chemical deposition (LSMCD)-derived $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films with thickness variation" Thin Solid Films, 379, 183 (2000).
- [59]. N. Solayappan, G. F. Derbenwick, L. D. Mcmillan, C. A. Paz, D.

- Araujo, S. Hayashi, “ Conformal LSMCD deposition of $\text{SrBi}_2(\text{Ta}_x\text{Nb}_{1-x})_2\text{O}_9$ ” *Integ. Ferro.*, 14, 237 (1997).
- [60]. I. Koiwa, Y. Okada and J. Mita, “ Preparation of ferroelectric $\text{Sr}_{0.7}\text{Bi}_{2.3}\text{Ta}_2\text{O}_9$ thin films by misted deposition method using alkoxide solutuin” *Ieice Trans. Electron.*, E81-C, 590 (1998).
- [61]. C. W. Chung and I. Chung, ” Effect of pre-annealing on physical and electrical properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films prepared by chemical solution deposition” *Thin Solid Films*, 354, 111 (1999).
- [62]. C. R. Foschini and P. C. Joshi, “ Properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films prepared by chemical solution deposition technique for dynamic random-access memory application” *J. Mater. Res.*,14, 1860 (1999).
- [63]. N. Ogata and M. Nagata, ” Crystallization of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films in N_2 ambient by chemical solution deposition method” *Jpn. J. Appl. Phys.*, 40, 2403 (2001).
- [64]. H. Ling, A. Li, D. Wu, T. Yu, Z. Liu, N. Ming, “ Structure and electrical properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ thin films annealed in different atmosphere” *Mater. Lett.*, 49, 303 (2001).
- [65]. K. Watanabe, A. J. Hartmann, J. F. Scott, “ A novel fabrication method for stoichiometric strontium bismuth tantalate thin films for memory devices” *Appl. Phys.*, A70, 243 (2000).
- [66]. A. Li, D. Wu, H. Ling, T. Yu, M. Wang, X. Yin, Z. Liu and N. Ming, ” Effects of processing on the characteristics of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ films prepared by metalorganic decomposition” *J. Appl. Phys.*, 88, 1035 (2000).
- [67]. Y. Ito, M. Ushikubo, S. Yokoyama, H. Matsunaga, T. Atsuki, T. Yonezawa and K. Ogi, “ New low temperature processing of sol-gel

- SrBi₂Ta₂O₉ thin films” Jpn. J. Appl. Phys., 35, 4925 (1996).
- [68]. S-H. Kim, D. J. Kim, J-P. Maria, A I. Kingon, S. K. Streiffer, J. Im, O. Auciello, A. R. Krauss, “ Influence of Pt heterostructure bottom electrodes on SrBi₂Ta₂O₉ thin film properties” J. Appl. Phys., 76, 496 (2000).
- [69]. K. Watanabe, A. J. Hartmann R. N. Lamb, J. F. Scott, “ Electroic characteristics of the SrBi₂Ta₂O₉ – Pt junction” J. Appl. Phys., 84, 2170 (1998).
- [70]. S. Y. Cha, B-T. Jang and C. Lee, “ Effects of Ir electodes on the dielectric constants of Ba_{0.5}Sr_{0.5}Ta₂O₉ films” Jpn. J. Appl. Phys., 38, L49 (1999).
- [71]. N. Izumi, Y. Fujimori, T. Nakamura and A. Kamisawa, “ Properties of ferroelectric memory with Ir system materials as electrodes” Ieice Trans. Electron., E81-C,513(1998).
- [72]. S. Tirumala, S. O. Ryu, K. B. Lee, R. Vedula and S. B. Desu, “ Dependence of ferroelectric propertied of SBT based capacitors on the electried material” Mat. Res. Soc. Symp. Proc.,541, 185 (1999).
- [73]. Y. Okada, I. Koiwa, K. Ashikaga and K. Kaifu, “ SrBi₂Ta₂O₉ thin films fabricated by sol-gel method with IrO₂ electrodes” Ieice Trans. Electron., E81-C, 560 (1998).
- [74]. B. Nagaraj, S. Aggarwal and R. Ramesh, “ Influence of contact electrodes on leakage characteristics in ferroelectric thin films” J. Appl. Phys., 90, 375 (2001).
- [75]. K. R. Udayakumar, P. J. Schnle, J. Chen, S. B. Krupanidhi, and L. E. Cross, J. Appl. Phys. 77, 3981 (1995).
- [76]. J. Zhu, X. Zhang, Y. Zhu, and S. B. Desu, J. Appl. Phys. 83, 1610 (1998).

- [77]. H. F. Kay and J. W. Dunn, *Philos. Mag.* 7,2027 (1962).
- [78]. J. F. Scott, C. A. Araujo, L. D. Mcmillan, in *Proceedings of the 6th IEEE International Symposium on Applied Ferroelectrics*, p.569 (1986).
- [79]. E. C. Subbarao, "A family of ferroelectric bismuth compounds" *J. Phys. Chem. Solids Pergamon Press*,23,665 (1962).
- [80]. L. L. Hench and J. K. West, "Principles of electronic ceramics" John Wiley & sons, Publishing Co., (1990).
- [81] S. O. Kasap, "Principles of electrical engineering materials and devices" McGraw-Hill, Publishing Co., (1997).
- [82]. S. B. Desu and I. K. Yoo, "Electrochemical models of failure in oxide perovskites" *Integ. Ferro.*, 3, 365 (1993).
- [83]. W. L. Warren, D. Dimos, B. A. Tuttle, G. E. Pike and H. N. Ai-Shareef, "Relationships among ferroelectric fatigue, electronic charge trapping, defect-dipoles, and oxygen vacancies in perovskite oxides" *Integ. Ferro.*, 16, 77 (1997).
- [84]. J. J. Lee, C. L. Thio and S. B. Desu, "Retention and imprint properties of ferroelectric thin films" *Phy. Stat. Sol.*, (a) 151, 171 (1995).
- [85]. Y. Shimada, M. Azuma, K. Nakao, S. Chaya, N. Moriwaki and T. Otsuki, "Empirical reliability models of retention failures in a ferroelectric memory device using $\text{SrBi}_2(\text{Ta,Nb}_2)\text{O}_9$ " *Integ. Ferro.*, 17, 45 (1997).
- [86]. Yuichi Nakao, Takashi Nakamura, Akira Kamisawa, Hidemi Takasu, *Integrated Ferroelectrics*, 6, 23 (1995).

Chapter 3

- [87]. Chung-Hsin Lu and Buh-Kuan Fang, “ Synthesis processes and sintering behavior of layered-perovskite barium bismuth tantalite ceramics”, *J. Mater. Res.*, 13, 2262 (1998).
- [88]. G. W. Dietz, M. Schumacher, A. I. Waser, “ Leakage current in $Ba_{0.5}Sr_{0.5}Ta_2O_9$ thin films for ultrahigh-density dynamic random access memories”, *J. Appl. Phys.*, 52, 2359 (1997).

Chapter 4

- [89]. T. Hayashi, T. Hara and H. Takahashi, *Jpn. J. Appl. Phys.*, 36 (1997), p. 5900.
- [90]. Y. Kim, H. K. Chae, K. S. Lee and W. I. Lee, *J. Mater. Chem.*, 8 (1998), p. 2317.
- [91]. K. Kako, C. Zheng, J. M. Funder and S. K. Dey, *J. Am. Ceram. Soc.*, 81 (1998), p. 1869.
- [92]. K. Kato, *Jpn. J. Appl. Phys.*, 37 (1998), p. 5178.
- [93]. S. M. Zanetti, E. Leite and E. Longo, *J. Mater. Res.*, 13 (1998), p. 2932.
- [94]. Q. F. Zhou, H. L. W. Chan, C. L. Choy, *J. Non-Cry. Sol.*, 254 (1999), p. 106.
- [95]. T. J. Boyle, C. D. Buchheit, M. A. Rodriguez, H. N. Al-Shareef and B. A. Hernandez, *J. Mater. Res.*, 11 (1996), p. 2274.
- [96]. A. Li, D. Wu, H. Ling, T. Yu, M. Wang, X. Yin, Z. Liu, N. Ming, *Thin Solid Films*, 375, (2000), p. 215.
- [97]. T. C. Chen, T. Li, X. Zhang and S. B. Desu, *J. Mater. Res.*, 12

(1997), p. 1569.

- [98]. I. Koiwa, Y. Okada, J. Mita, A. Hashimoto and Y. Sawada, Jpn. J. Appl. Phys., 36 (1997), p. 5904.
- [99]. M. A. Rodriguez, T. J. Boyle, B. A. Hernandez, C. D. Buchheit, and M. O. Eatough, J. Mater. Res., 11 (1996), p. 2282.
- [100]. K. Miura and M. Tanaka, Jpn. J. Appl. Phys., 37, 2554 (1998).
- [101]. D. Dimos, H. N. Al-shareef, W. L. Warren and B. A. Tuttle, J. Appl. Phys., 80, 1682 (1996).
- [102]. D. Wu, A. Li, H. Ling, T. Yu, Z. Lui and N. Ming, Appl. Phys. Lett., 76, 2208 (2000).
- [103]. S. Okamura, M. Takaoka, T. Nishida and T. Shiosaki, Jpn. J. Appl. Phys., 39, 5481 (2000).
- [104]. H. M. Tsai, P. Lin and T. Y. Tseng, J. Appl. Phys., 85 (1999), p. 1095.



Chapter 5

- [105]. H. T. Lue, C. J. Wu and T. Y. Tseng, IEEE Trans. on Electron Devices 49 (2002) 1790.
- [106]. H. T. Lue, C. J. Wu and T. Y. Tseng, IEEE Trans. on UFFC 50 (2003) 5.
- [107]. T. Y. Tseng and S. Y. Lee, Appl. Phys. Lett. (in print).
- [108]. S. Chattopadhyay, P. Ayyub, V. R. Palkar and M. Multani, Phys. Rev. B 52 (1995) 13177.
- [109]. S. B. Ren, C. J. Lu, J. S. Liu, H. M. Shen, and Y. N. Wang, Phys. Rev. B 54 (1996) R14337.
- [110]. S. B. Ren, C. J. Lu, J. S. Liu, H. M. Shen, and Y. N. Wang, Phys.

Rev. B 55 (1997) 3485.

[111]. G. Arlt, D. Hennings, and G. de With, J. Appl. Phys. 58 (1985) 1619.

[112]. B. Dickens, E. Balizer, A. S. DeReggi, and S. C. Roth, J. Appl. Phys. 72 (1992) 4258.

[113]. B. K. Moon, C. Isobe, K. Hironaka, and S. Hishikawa, J. Appl. Phys. 89 (2001) 6557.

[114]. Y. P. Zhao, G. C. Wang, T. M. Lu, G. Palasamtzas and J. Th. M. De Hosson, Phys. Rev. B 60 (1999) 9157.

[115]. Y. S. Kim, M. Y. Sung, Y. H. Lee, B. K. Ju and M. H. Oh, J. Electrochem. Soc. 146 (1999) 3398.

[116]. Y. S. Kim, Y. H. Lee, K. M. Lin and M. Y. Sung, Appl. Phys. Lett. 74 (1999) 2800.

[117]. S. E. Cummins, J. Appl. Phys. 35 (1964) 3045.

[118]. B. H. Park, S. J. Hyun, S. D. Bu, T. W. Noh, J. Lee, H. D. Kim, T. H. Kim, and W. Jo, Appl. Phys. Lett. 74 (1999) 1907.

[119]. B.H. Pak, B. S. Kang, S. D. Bu, T. W. Noh, J. Lee, and W. Jo, Nature 401 (1999) 682.

Chapter 6

[120]. Y. Oishi, Y. Matsumuro, and M. Okuyama, Jpn. J. Appl. Phys., Part 1 36, 5896 (1997).

[121]. I. Koiwa, T. Kanehara, J. Mita, T. Iwabuchi, T. Osaka, and S. Ono, Jpn. J. Appl. Phys., Part 1 36, 1597 (1997).

[122]. C. C. Leu, M. C. Yang, C. T. Hu, C. H. Chien, M. J. Yang, and T. Y. Huang, Appl. Phys. Lett., 79, 3833 (2001).

- [123]. T. Osaka, T. Yoshie, T. Hoshika, I. Koiwa, Y. Sawada, and A. Hashimoto, *Jpn. J. Appl. Phys., Part 1* 39, 5476 (2000).
- [124]. W. C. Shin and S. G. Yoon, *Appl. Phys. Lett.*, 79, 1519 (2001).
- [125]. K. Aoki, Y. Fukuda, K. Numata, and A. Nishimura, *Jpn. J. Appl. Phys., Part 1* 34, 192 (1995).
- [126] S. T. Kim, H. H. Kim, M. Y. Lee, and W. J. Lee, *Jpn. J. Appl. Phys., Part 1* 36, 294 (1997).
- [127]. P. Muralt, T. Maeder, L. Sagalowicz, S. Hiboux, S. Scalese, D. Naumovic, R. G. Agostino, N. Xanthopoulos, H. J. Mathieu, L. Pathey, and E. L. Bullock, *J. Appl. Phys.*, 83, 3835 (1998).
- [128]. Takashi Hayashi and Daichi Togawa, *Jpn. J. Appl. Phys., Part 1* 40, 5585 (2001).
- [129]. T. Kanashima and M. Okuyama, *Jpn. J. Appl. Phys., Part 1* 38, 2044 (1999).



Chapter 7

- [130]. Takayuki Watanabe, Hiroshi Funakubo, Minoru Osada, Yuji Noguchi and Masaru Miyayama, *Appl. Phys. Lett.* 80, 100 (2002).
- [131]. Takashi Kojima, Tomohiro Sakai, Takayuki Watanabe, Hiroshi Funakubo, Keisuke Saito and Minoru Osada, *Appl. Phys. Lett.* 80, 2746 (2002).
- [132]. Hiroshi Uchida, Hiroki Yoshikawa, Isao Okada, Hirofumi Matsuda, Takayuki Watanabe, Takashi Kojima and Hiroshi Funakubo, *Appl. Phys. Lett.* 81, 2229 (2002).
- [133]. M. Osada, M. Tada, M. Kakihana, T. Watanabe and H. Funakubo,

- Jpn. J. Appl. Phys. 40, 5572 (2001).
- [134]. Y. K. Wang, T. Y. Tsing and Pang Lin, Appl. Phys. Lett. 80, 3790 (2002).
- [135]. E. Tokumitsu, G. Fujii and H. Ishiwara: Mat. Res. Symp. Proc. 493, 459 (1998).
- [136]. Migita, K. Sakamaki, H. Ota, S. B. Xio, Y. Tarui, and S. Sakai, Integr. Ferroelectr. 40, 135 (2001)
- [137]. T. Kijima, and H. Matsunaga, Jpn. J. Appl. Phys., Part 1 38, 2281

Chapter 8

- [138]. G. A. Alers, D. J. Werder, Y. Chabal, H. C. Lu, E. P. Gusev, E. Garfunkel, T. Gustafsson, and R. S. Urdahl, Appl. Phys. Lett. 73, 1517 (1998).
- [139]. E. P. Gusev, M. Copel, W. Cartier, I. J. R. Baumvol, C. Krug, and M. A. Gribelyuk, Appl. Phys. Lett. 76, 176 (2000).
- [140]. H. Mori and H. Ishiwara, Jpn. J. Appl. Phys., Part 2 30, L1415 (1991).
- [141]. G. Lucovsky and G. B. Rayner, Jr., Appl. Phys. Lett. 77, 2912 (2000).
- [142]. H. Harris, K. Choi, N. Medhta, A. Chandolu, N. Biswas, G. Kipshidze, S. Nikishin, S. Gangopadhyay, and H. Tempkin, Appl. Phys. Lett. 81, 1065 (2002).
- [143]. Z. Xu, M. Houssa, S. De Gendt, and M. Heyns, Appl. Phys. Lett. 80, 1975 (2002).
- [144]. W. B. Blumenthal, The Chemical Behavior of Zirconium (Van Nostrand, Princeton, 1958), pp. 201-219.

- [145]. A. I. Kingon, J.-P. Maria and S. K. Streiffer, *Nature*, 406, 1032 (2000).
- [146]. W. D. Kingery, H. K. Bowen, D. R., Uhlmann, *Introduction to ceramics*, Jon Wiley & Sons, Inc. p. 947 (1976)
- [147]. B. A. Baumert, L.-H. Chang, A. T. Matsuda, T.-L. Tsai, C. J. Tracy, D. J. Taylor, and K. Suu, *J. Appl. Phys.* 82, 2558 (1997).

