

REFERENCES

- [1] K. Babooram, H. Taylor and Z.-G. Ye, "Phase formation and dielectric properties of 0.09Pb(Mg_{1/3}Nb_{2/3})O₃-0.10PbTiO₃ ceramics prepared by a new sol-gel method", *Ceram. Int.*, 30, 1411-1417, 2004.
- [2] A.S. Mischenko, Q. Zhang, R.W. Watmore, J.F. Scott and N.D. Mathur, "Giant electrocaloric effect in the thin film relaxor ferroelectric 0.09PbMg_{1/3}Nb_{2/3}O₃-0.10PbTiO₃ near room temperature", *Appl. Phys. Lett.*, 89, 242912(1)-(4), 2006.
- [3] K. Uchino, "Piezoelectric Actuator and Ultrasonic Motors". Kluwer Academic, Boston, 1996.
- [4] V.V. Shvartsman, D.C. Lupascu, "Lead-Free Relaxor Ferroelectrics", *J. Am. Ceram. Soc.* 95, 1-26, 2012.
- [5] H. Yu, Z.G. Ye, "Effects of sintering temperature on the relaxor behavior of 0.85BaTiO₃-0.15BiAlO₃ solid solution", *Ferroelectrics.*, 381, 183-190, 2009.
- [6] P. Butnoi, N. Pisitpipathsin, P. Pengpad, S. Eitssayeam, P. Bintachitt, K. Pengpat, "Influence of BCZT dopant on dielectric properties of PZT ceramics", *Ferroelectrics.*, 487, 101-108, 2015.
- [7] C. Wang, W. Ni, X. Sun, L. Wang, C. Wang and K. Jin, "Relaxor-like behaviors in Na_{1/2}Bi_{1/2}Cu₃Ti₄O₁₂ ceramics", *J. Am. Ceram. Soc.*, 1-8, 2017.
- [8] A.A. Bokov, Z.-G. Ye, "Dielectric relaxation in relaxor ferroelectrics", *J. Adv. Dielectr.*, 2, 1241010(1)-(24), 2012.
- [9] L.E. Cross, "Relaxor ferroelectrics", *Ferroelectrics.*, 76, 241-261, 1987.
- [10] Z. G. Ye, "Relaxor ferroelectric complex perovskite: structure, properties and phase transition behavior of perovskite ferroelectrics", *Key. Eng. Mater.*, 81, 155-156, 1998.
- [11] D. Viehland, S.J. Jang, L.E. Cross, M. Wutting, "Freezing of the polarization fluctuations in lead magnesium niobate relaxor", *J. Appl. Phys.*, 68, 2916-2921, 1990.
- [12] X. Qin, D. Shihua, P. Yong, W. Xiaoliang, "Ferroelectric relaxor behavior in Co-doped BCZT ceramic", *Ferroelectrics.*, 4501, 35-41, 2013.
- [13] A.A. Bokov and Z.-G. Ye, "Dielectric dispersion and critical behavior in relaxor ferroelectric (1-x)Pb(Mg_{1/3}Nb_{2/3})O₃-xPbTiO₃", *Appl. Phys. Lett.*, 77, 1888-1890, 2000.
- [14] A.A. Bokov, Z.-G. Ye, "Universal relaxor polarization in Pb(Mg_{1/3}Nb_{2/3})O₃ and related materials", *Phys. Rev. B.*, 66, 0641(1)-(9), 2002.

- [15] W. Liu, X. Ren, "Large piezoelectric effect in Pb-free ceramics", *Phys. Rev. Lett.*, 103, 257602(1)-(4), 2009.
- [16] P. Wang, Y. Li, Y. Lu, "Enhanced piezoelectric properties of $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Ti}_{0.9}\text{Zr}_{0.1})\text{O}_3$ lead-free ceramics by optimizing calcination and sintering temperature", *J. Euro. Ceram. Soc.*, 31, 2005-2012, 2011.
- [17] T. Chen, T. Zhang, G. Wang, J. Zhou, J. Zhang, Y. Liu, "Effect of CuO on the microstructure and electrical properties of $\text{Ba}_{0.85}\text{Ca}_{0.15}\text{Ti}_{0.90}\text{Zr}_{0.10}\text{O}_3$ piezoceramics", *J. Mater. Sci.*, 47, 4612-4619, 2012.
- [18] M. Promsawat, "Effect of oxide additions on mechanical and electrical properties of lead magnesium niobate-lead titanate ceramics", Ph.D. Thesis, Chiang Mai University, 2014.
- [19] P. Jaimeewong, M. Promsawat, S. Jiansirisomboon, A. Watcharapasorn, "Influence of pH values on the surface and properties of BCZT nanopowders synthesized via sol-gel auto-combustion method", *Surf. Coat. Tech.*, 306, 16-20, 2016.
- [20] S. Wu, X. Wei, X. Wang, H. Yang, S. Gao, "Effect of Bi_2O_3 additive on the microstructure and dielectric properties of BaTiO_3 -based ceramics sintered at lower temperature", *J. Mater. Sci. Tech.*, 26, 472-476, 2010.
- [21] R. Hayati, M.A. Bahrevar, T. Ebadzadeh, V. Rojas, N. Novak, J. Koruza, "Effects of Bi_2O_3 additive on sintering process and dielectric, ferroelectric, and piezoelectric properties of $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Zr}_{0.1}\text{Ti}_{0.9})\text{O}_3$ lead-free piezoelectrics", *J. Eur. Ceram. Soc.*, 36, 3391-3400, 2016.
- [22] F. Jiang, S. Kojima, C. Zhao, C. Feng, "Raman scattering on the B-site order controlled by A-site substitution in relaxor perovskite ferroelectrics", *J. Appl. Phys.*, 88, 3608-3612, 2000.
- [23] M.P. Thi, A.-C. Hladky-Hennionb, H.L. Khanh, L.-P. Tran-Huu-Hue, M. Lethiecq, F. Levassort, "Large area 0-3 and 1-3 piezoelectric composites based on single crystal PMN-PT for transducer applications", *Phys. Procedia.*, 3, 897-904, 2010.
- [24] A.J. Moulson and J.M. Herbert, "Electroceramics," New York: Chapman and Hall Press, 1996.
- [25] A. J. Mouson and J. M. Herbert, "Electroceramics", 2nd ed., Chichester: John Wiley and Sons, 2003.

- [26] J. Valasek, "Piezo-electric and allied phenomena in Rochelle salt" *Phys. Rev.*, 17, 475-481, 1921.
- [27] Z. Fan, K. Sun, J. Wang, "Perovskites for photovoltaics: a combined review of organic-inorganic halide perovskites and ferroelectric oxide perovskites", *J. Mater. Chem. A*, 37, 1-18, 2015.
- [28] K.M. Rabe, C.H. Ahn and J.M. Triscone, "Physics of ferroelectrics", Heidelberg:Springer, 2007.
- [29] C.B. Sawyer and C.H. Tower, "Rochelle salt as a dielectric", *Phys. Rev.*, 35, 1930, 269-273.
- [30] Y. Xu, "Ferroelectric Materials and their application", Amsterdam: North Holland: Elsevier Science Publisher, 1991.
- [31] Y. Wang, W. Chen, B. Wang, Y. Zheng, "Ultrathin Ferroelectric Films: Growth, Characterization", *Materials*, 7(9), 6377-6488, 2014.
- [32] B. Jaffe, W.R. Cook and H. Jaffe, "Piezoelectric ceramics," London UK: Academic press, 1971.
- [33] G. A. Smolenskii, V.A. Isupov, "Segnetoelek tricheskie svoistva tverdykh rastvorov stannata bariya v titanate bariya", *Zh. Tech. Fiz.*, 24, 1375-1386, 1954.
- [34] J. Rödel, W. Jo, K.T.P. Seifert, E.-M. Anton, T. Granzow, D. Damjanovic, "Perspective on the Development of Lead-Free Piezoelectrics", *J. Am. Ceram. Soc.*, 92, 1153-1577, 2009.
- [35] M.D. Maeder, D.Damjanovic, N. Setter, "Lead-free Piezoelectric Materials", *J. Electroceram.*, 13, 385-392, 2004.
- [36] T. Takenaka, H. Nagata, Y. Hiruma, "Current Developments and Prospective of Lead-Free Piezoelectric Ceramics", *Jpn. J. App. Phys.*, 47, 3787-3801, 2008.
- [37] M. Ahtee, A.M. Glazer, "Lattice Parameters and Tilted Octahedra in Sodium-Potassium Niobate Solid Solutions", *Acta. Cryst. Section A*, 32, 434-446, 1976.
- [38] A. A. Bokov and Z. G. Ye, "Recent progress in relaxor ferroelectrics with perovskite structure", *J. Mater. Sci.*, 41, 31-52, 2006.
- [39] G. A. Samara and E.L. Venturimi, "Ferroelectric/relaxor crossover in compositionally disordered perovskites", *Phase Transitions*, 79, 21-40, 2006.
- [40] G.A. Smolensky, "Physical phenomena in ferroelectric with diffused phase transition", *J. Phys. Soc. Jpn.*, 28, 26-37, 1987.

- [41] A. A. Bokov and Z.-G. Ye, “Double freezing of dielectric response in relaxor $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ crystals”, *Phys. Rev. B*, 74, 132102(1)-(9), 2006.
- [42] A. A. Bokov, Y.H. Bing, W. Chen, Z.-G. Ye, S.A. Bogatina, I.P. Raevski, S.I. Raevskaya and E.V. Sahkar, “Empirical scaling of the dielectric permittivity peak in relaxor ferroelectrics”, *Phys. Rev. B*, 68, 052102(1)-(4), 2003.
- [43] M. Promsawat, A. Watcharapasorn, Z.-G. Ye, S. Jiansirisomboon, “Enhanced ferroelectric order in $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})_{0.9}\text{Ti}_{0.1}\text{O}_3$ ceramics by ZnO modification”, *J. Electroceram.*, 33, 96-104, 2014.
- [44] Z. Yu, C. Ang, R. Guo, A.S. Bhalla, “Piezoelectric and strain properties of $\text{Ba}(\text{Ti}_{1-x}\text{Zr}_x)\text{O}_3$ ceramics”, *J. Appl. Phys.*, 92, 1489-1493, 2002.
- [45] T. Maiti, R. Guo, A.S. Bhalla, “Structure-Property Phase Diagram of $\text{BaZr}_x\text{Ti}_{1-x}\text{O}_3$ system”, *J. Am. Ceram. Soc.*, 91, 1769-1780, 2008.
- [46] D. E. Cox, B. Noheda, G. Shirane, Y. Uesu, K. Fujishiro, and Y. Yamada, “Universal phase diagram for high-piezoelectric perovskite systems”, *Appl. Phys. Lett.*, 79, 400, 2001.
- [47] D.S. Keeble, F. Benabdallah, P.A. Thomas, M. Maglione, J. Kreisel, “Revised structure phase diagram of $(\text{Ba}_{0.7}\text{Ca}_{0.3}\text{TiO}_3)$ -($\text{BaZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$)”, *Appl. Phys. Lett.*, 102, 092903(1)-(6), 2013.
- [48] M. A. Rafiq, M. N. Rafiq, K. V. Saravanan, “Dielectric and Impedance spectroscopic studies of lead-free barium-calcium-zirconium-titanium oxide ceramics”, *Ceram. Inter.*, 41, 11436-11444, 2015.
- [49] J. Wu, D. Xiao, W. Wu, J. Zhu, J. Wang, “Effect of dwell time during sintering on piezoelectric properties of $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Ti}_{0.90}\text{Zr}_{0.10})\text{O}_3$ lead-free ceramics”, *J. Alloys Compd.*, 509, L359-L361, 2011.
- [50] J. Wu, D. Xiao, W. Wu, Q. Chen, J. Zhu, Z. Yang, J. Wang, “Role of room-temperature phase transition in the electrical properties of $(\text{Ba}, \text{Ca})(\text{Ti}, \text{Zr})\text{O}_3$ ceramics”, *Scr. Mater.*, 65, 771-774, 2011.
- [51] Y. Cui, X. Liu, M. Jiang, Y. Hu, Q. Su, H. Wang, “Lead-free $(\text{Ba}_{0.85}\text{Ca}_{0.15})\text{TiO}_3$ - $\text{Ba}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ -xwt%CuO”, *J. Mater. Sci.: Mater. Electron.*, 23, 1342-1345, 2012.
- [52] Y. Cui, X. Liu, M. Jiang, Y. Hu, Q. Su, H. Wang, “Lead-free $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Ti}_{0.9}\text{Zr}_{0.1})\text{O}_3$ - Y_2O_3 ceramics with large piezoelectric coefficient obtained by low-temperature sintering”, *J. Mater. Sci.: Mater. Electron.*, 24, 654-657, 2013.

- [53] X. Wang, P. Liang, L. Xei, X. Chao, Z. Yang, Diffusion phase transition and impedance spectroscopy of $\text{Bi}_2\text{O}_3/\text{CuO}$ co-doped BCZT lead-free ceramics, *J. Mater. Sci.: Mater. Electron.*, 27, 3217-3226, 2016.
- [54] I. Coondoo, N. Panwar, R. Vidyasagar, A. Kholkin, "Defect chemistry and relaxation processes: effect of an amphoteric substituent in lead-free BCZT ceramics", *Phys. Chem. Chem. Phys.*, 18, 31184-31189, 2016.
- [55] R. Hayati, M. A. Bahrevar, T. Ebadzadeh, V. Rojas, N. Novak, J. Koruza, "Effects of Bi_2O_3 additive on sintering process and dielectric, ferroelectric, and piezoelectric properties of $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Zr}_{0.1}\text{Ti}_{0.9})\text{O}_3$ lead-free piezoceramics", *J. Eur. Ceram. Soc.*, 36, 3391-3400, 2016.
- [56] M. Wang, R. Zuo, S. Qi, L. Liu, "Synthesis and characterization of sol-gel derived $(\text{Ba,Ca})(\text{Ti,Zr})\text{O}_3$ nanoparticles", *J. Mater. Sci.: Mater. Electron.*, 23, 753-757, 2012.
- [57] G. K. Sahoo, R. Mazumder, Low temperature synthesis of $\text{Ba}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ - $0.5(\text{Ba}_{0.7}\text{Ca}_{0.3})\text{TiO}_3$ nanopowders by solution based auto combustion method, *J. Mater. Sci.: Mater. Electron.*, 25, 3515-3519, 2014.
- [58] K.C. Patil, S.T. Arunab, T. Mimani, "Combustion synthesis: an update", *Curr. Opin. Solid. St. M.*, 6, pp. 507-512, 2002.
- [61] W. Kraus and G. Nolze, "Power Cell-a program for the representation and manipulation of crystal structure and calculation of the resulting X-ray powder patterns" *J. Appl. Cryst.*, 29, 301-303, 1996.
- [62] Brain H. Toby, "R factors in Rietveld analysis: How good is good enough?", *Powder Diff.*, 21 (1), 67-70, 2006.
- [63] C. Kranz and B. Mizaikoff, "Microscopic Techniques for the Characterization of Gold Nanoparticles", Chapter in Comprehensive Analytical Chemistry, 2014.
- [64] H. Tailor, Thesis of doctor of philosophy, "Synthesis and characterization of complex perovskite solid solutions", Simon Fraser University, 2010.
- [65] Z. Wang, K. Zhao, X. Guo, H. Jiang, X. Han, X. Tao, Z. Cheng, H. Zhao, H. Kimura, G. Yuan, J. Yin, Z. Liu, "Crystallization , phase evolution and ferroelectric properties of sol-gel-synthesized $\text{Ba}(\text{Ti}_{0.8}\text{Zr}_{0.2})\text{O}_3$ - $x(\text{Ba}_{0.7}\text{Ca}_{0.3})\text{TiO}_3$ thin film", *Mater. Chem. C*, 1, 522-530, 2013.

- [66] P. Mishra, P. Kumar, "Effect of sintering temperature on dielectric , piezoelectric and ferroelectric properties of BZT-BCT 50/50 ceramics", *J. Alloys Compd.*, 545, 210-215, 2012.
- [67] K.C. Patil, M.S. Hegde, T. Rattan, S.T. Aruna, "Chemistry of Nanocrystalline Oxide Materials Combustion Synthesis Properties and Applications", *World scientific publishing*, Singapore, 2008.
- [68] B.D. Cullity, "Elements of X-ray Diffraction (2nd Ed.)", Addison-Wesley Publ Co., Inc., Reading, MA, 100-105, 277-279, 1978.
- [69] H. Hayashi, T. Nakamura, T. Ebina, "In-situ raman spectroscopy of BaTiO₃ particles for tetragonal-cubic transformation", *J. Phys. Chem. Solids.*, 74 , 957-962, 2013.
- [70] J. Chandradass, K.H. Kim, "Effect of precursor ratios on the synthesis of MgAl₂O₄ nanoparticles by a reverse microemulsion method", *J. Ceram. Process. Res.*, 11, 96–99, 2010.
- [71] L.M. Lozano Sánchez, S.W. Lee, T. Sekino, V. Rodríguez-González, "Practical microwave-induced hydrothermal synthesis of rectangular-prism-like CaTiO₃", *Cryst. Eng. Comm.*, 15, 2359-2362, 2013.
- [72] A. Abdel Aala, T.R. Hammad, M. Zawrah, I.K. Battisha, A.B. Abou Hammad, "FTIR study of nanostructure perovskite BaTiO₃ doped with both Fe³⁺ and Ni²⁺ ions prepared by sol-gel technique", *Acta. Phys. Pol. A*, 126 , pp. 1318-1321, 2014.
- [73] F.V. Motta, A.P.A. Marques, C.A. Paskocimas, M.R.D. Bomio, A.S.F. Santos, E.R. Leite, J.A. Varela, E. Longo, "Synthesis of Ba_{1-x}Ca_xTiO₃ by complex polymerization method (CPM)", *INTECH*, 261-278, 2012.
- [74] W. Kraus and G. Nolze, "Power Cell-a program for the representation and manipulation of crystal structures and calculation of the resulting X-ray powder patterns" *J. Appl. Cryst.*, 29, 301-303, 1996.
- [75] J. Paul Praveen, T. Karthik, A.R. James, E. Chandrakala, S. Asthana, D. Das, "Effect of poling process on piezoelectric properties of sol-gel derived BZT-BCT ceramics", *J. Eur. Ceram. Soc.*, 35, 1785-1798, 2015.
- [76] S. Khorrami, F. Gharib, G. Mahmoudzadeh, S. S. Sepehr, S. S. Madani, N. Naderfar, S. Manie, "Synthesis and characterization of nanocrystalline spinel Zinc ferrite prepared by sol-gel auto-combustion technique", *Int. J. Nano. Dimens.* 3, 221-224, 2011.

- [77] P.K. Roy and J. Bera, "Characterization of nanocrystalline NiCuZn ferrite powders synthesized by sol-gel auto-combustion method", *J. Mater. Process. Technol.*, 197, 279-283, 2008.
- [78] S. Khorrami, F. Gharib, G. Mahmoudzadeh, S. S. Sepehr, S. S. Madani, N. Naderfar, S. Manie, "Synthesis and characterization of nanocrystalline spinel Zinc ferrite prepared by sol-gel auto-combustion technique", *Int. J. Nano. Dimens.* 3, 221-224, 2011.
- [79] J. P. Praveen, K. Kumar, A.R. James, T. Karthik, S. Asthana, D. Das, "Large piezoelectric strain observed in sol-gel derived BZT-BCT ceramics", *J. Curr. Appl. Phys.*, 14, 396, 2014.
- [80] J. Hao, W. Bai, W. Li, J. Zhai, "Correlation between the microstructure and electrical properties in high-performance $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Zr}_{0.1}\text{Ti}_{0.9})\text{O}_3$ lead-free piezoelectric ceramics", *J. Am. Ceram. Soc.* 95, 1998-2006, 2012.
- [81] J. Wu, D. Xiao, W. Wu, J. Zhu, J. Wang, "Effect of dwell time during sintering on piezoelectric properties of $(\text{Ba}_{0.90}\text{Ca}_{0.10})(\text{Ti}_{0.85}\text{Zr}_{0.15})\text{O}_3$ lead-free ceramics", *J. Alloys. Compnd.*, 509, 359-361, 2011.
- [82] C. K. I. Tan, K. Yao and J. Ma, "Effects of LiF on the structure and properties of $\text{Ba}_{0.85}\text{Ca}_{0.15}\text{Zr}_{0.1}\text{Ti}_{0.9}\text{O}_3$ lead-free piezoelectric ceramics", *Int. J. Appl. Ceram. Technol.*, 10, 701-706, 2013.
- [83] Q. Tan and D. Viehland, "Grain size dependence of relaxor characteristics in La-modified lead zirconate titanate", *Ferroelectric*. 193, 157, 1997.
- [84] G. Arlt, D. Hennings and G. de With, Dielectric properties of fine-grained barium titanate ceramics, *Journal of Applied Physics*, 58, 1619 (1985)
- [85] I. Coondoo, N. Panwar, H. Amorin, M. Alguero, A. Kholkin, "Synthesis and characterization of lead-free $0.5\text{Ba}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ - $0.5(\text{Ba}_{0.7}\text{Ca}_{0.3})\text{TiO}_3$ ceramic", *J. Appl. Phys.*, 113, 214107, 2013.
- [86] W. Cao and C. A. Randall, "Grain size and domain size relations in bulk ceramic ferroelectric materials", *J. Phys. Chem. Solids.*, 57, 1499-1505, 1996.
- [87] C. Kittel, "Theory of the structure of ferromagnetic domains in films and small particles", *Phys. Rev.*, 70, 965, 1946.
- [88] M. C. Ehmke, S. N. Ehrlich, J. E. Blendell, K. J. Bowman, "Phase coexistence and ferroelastic texture in high strain $(1-x)\text{Ba}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ - $x(\text{Ba}_{0.7}\text{Ca}_{0.3})\text{TiO}_3$ piezoceramics", *J. Appl. Phys.*, 111, 12410, 2012.

- [89] R. Hayati, M. A. Bahrevar, T. Ebadzadeh, V. Rojas, N. Novak, J. Koruza, Effect of Bi_2O_3 additive on sintering process and dielectric, ferroelectric, and piezoelectric properties of $(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Zr}_{0.1}\text{Ti}_{0.9})\text{O}_3$ lead-free piezoelectric, *J. Eur. Ceram. Soc.*, 36, 3391-3400, 2016.
- [90] T. Badapanda, V. Senthil, D.K. Rana, S. Panigrahi, S. Anwar, "Relaxor ferroelectric behavior of "A" site deficient bismuth doped barium titanate ceramic", *J. Electroceram.* 29, 117-124, 2012.
- [91] T. Zheng, Y. Ding, J. Wu, "Bi Nonstoichiometry and Composition Engineering in $(1-x)\text{Bi}_{1+y}\text{FeO}_{3+3y/2-x}\text{BaTiO}_3$ Ceramics", *RSC Adv.*, 6, 90831-90839, 2016.
- [92] Z. Zhao, X. Li, H. Ji, Y. Dai, T. Li, Microstructure and electrical properties in Zn-doped $\text{Ba}_{0.85}\text{Ca}_{0.15}\text{Ti}_{0.90}\text{Zr}_{0.10}\text{O}_3$ piezoelectric ceramics. *J. Alloy. Compd.*; 637, 291-296, 2015.
- [93] H.L. Du, D.J. Liu, F.S. Tang, D.M. Zhu, W.C. Zhou, Microstructure, piezoelectric, and ferroelectric properties of Bi_2O_3 -added $(\text{K}_{0.5}\text{Na}_{0.5})\text{NbO}_3$ lead-free ceramics, *J. Am. Ceram. Soc.*, 90: 2824-2829, 2007.
- [94] C.H. Wang, "Effect of Bi_2O_3 addition and sintering time on the physical and electrical properties of lead-free $(\text{Na}_{0.5}\text{Bi}_{0.5})\text{TiO}_3$ - $\text{Ba}(\text{Zr}_{0.04}\text{Ti}_{0.96})\text{O}_3$ ceramics", *J. Ceram. Soc. Jpn.*, 117, 693-697, 2009.
- [95] Y.F. Wei, C.H. Kao, C.F. Yang, H.H. Chung, H.H. Huang, Y.S. Yang, "Influence of excess Bi_2O_3 on the characteristics of $(\text{Na}_{0.5}\text{Bi}_{0.5})\text{TiO}_3$ - BaTiO_3 ceramics", *Key Eng Mater.*, 368-372: 65-68, 2008.
- [96] J.H. Park, B.K. Kim, J.G. Park, I.T. Kim, H.J. Je, Y. Kim, S.J. Park, "Dielectric Hysteresis measurement in lossy ferroelectrics", *Ferroelectrics*, 230, 151-156, 1999.
- [97] K. Wang, A. Hussain, W. Jo, J. Rödel, "Temperature-dependent properties of $(\text{Bi}_{1/2}\text{Na}_{1/2})\text{TiO}_3(\text{Bi}_{1/2}\text{K}_{1/2})\text{TiO}_3$ - SrTiO_3 lead-free piezoceramics", *J. Am. Ceram. Soc.*, 95; 2241-2247, 2012.
- [98] W. Zhao, R. Zuo, D. Zheng, L. Li, "Dielectric relaxor evolution and frequency insensitive giant strains in $(\text{Bi}_{0.5}\text{Na}_{0.5})\text{TiO}_3$ -modified $\text{Bi}(\text{Mg}_{0.5}\text{Ti}_{0.5})\text{O}_3$ - PbTiO_3 ferroelectric ceramics", *J. Am. Ceram. Soc.*, 97, 1855-1860, 2014.
- [99] www.johansondielectrics.com [July 11, 2017]

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International publication:

1. **P. Jaimeewong**, M. Promsawat, A. Watcharapasorn and S. Jiansirisomboon, Comparative study of properties of BCZT ceramics prepared from conventional and sol-gel auto combustion powders, *Integrated Ferroelectrics*, 175 (2016) 25-32.
2. **P. Jaimeewong**, M. Promsawat, S. Jiansirisomboon and A. Watcharapasorn, Influence of pH values on the surface and properties of BCZT nanopowders synthesized via sol-gel auto-combustion method, *Surface and Coating Technology*, 306 (2016) 16-20.
3. **P. Jaimeewong**, P. Ngernchuklin, N. Promsawat, S. Pojprapai, S. Jiansirisomboon, M. Promsawat and A. Watcharapasorn, Characterization of phase evolution, microstructure and electrical properties of sol-gel auto-combustion derived BCZT ceramics, *Journal of Nanoscience and Nanotechnology*, (2017) (In Press).
4. **P. Jaimeewong**, P. Boonsong, P. Ngernchuklin, R. Tipakotitikul, A. Niyompan, M. Promsawat, and A. Watcharapasorn, Enhanced sinterability and electrical properties of Bi₂O₃-added Ba_{0.85}Ca_{0.15}Zr_{0.1}Ti_{0.9}O₃ ceramic, *Ferroelectrics*, 511 (2017) 1-6.
5. **P. Jaimeewong**, Z. Liu, X. Wang, S. Jiansirisomboon, Z.-G. Ye and A. Watcharapasorn, Microstructural design and properties of PMNT crystal-embedded barium calcium zirconate titanate ceramics, *Ceramic International* (2017) (In Press).

International conferences:

1. **P. Jaimeewong**, P. Ngerchuklin, N. Promsawat, S. Pojprapai, S. Jiansirisomboon, M. Promsawat and A. Watcharapasorn, Preparation and properties of sol-gel auto combustion derived BCZT-ceramics, The 3rd International Conference on Advanced Electromaterials (ICAE), 17-20 November 2015, Jeju Grand Hotel, Jeju, Korea.
2. **P. Jaimeewong**, P. Boonsong, P. Ngerchuklin, R. Tipakotitikul, A. Niyompan, M. Promsawat, and A. Watcharapasorn, Enhanced sinterability and electrical properties of Bi₂O₃-added Ba_{0.85}Ca_{0.15}Zr_{0.1}Ti_{0.9}O₃ ceramic, 13th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity 8th International Workshop on Relaxor Ferroelectrics (RCBJSF-IWRF) June 19-24 2016, Shimane Prefectural Convention Center, Shimane, Japan.
3. **P. Jaimeewong**, Z. Liu, X. Wang, S. Jiansirisomboon, Z.-G. Ye and A. Watcharapasorn, Microstructural design and properties of PMNT crystal-embedded barium calcium zirconate titanate ceramics, The 10th Asian Meeting on Electroceramics (AMEC10), GIS TAIPEI TECH Convention Center, December 4-7 2016, Taipei, Taiwan.
4. **P. Jaimeewong**, Zuo-Gaung Ye, Piyalak Ngerchuklin and A. Watcharapasorn, Effect of Sintering time and sintering temperature on microstructure and relaxor behavior of BCZT-0.02Bi ceramics, 3rd International Conference on Applied Physics and Material Applied Physics and Material Applications (ICAPMA2017), 31 May – 2 June 2017, Pattaya, Thailand.

