

ເອກສາຮອ້າງອີງ

- Arias, Irene, Serebrinsky, S, & Ortiz, Michael. (2006). A phenomenological cohesive model of ferroelectric fatigue. **Acta materialia**, 54(4), 975-984.
- Arlt, G. (1990). Twinning in ferroelectric and ferroelastic ceramics: stress relief. **Journal of materials science**, 25(6), 2655-2666.
- Arlt, G., & Hennings, D. (1985). Dielectric properties of fine-grained barium titanate ceramics. **Journal of Applied Physics**, 58(4), 1619-1625.
- Brennan, Ciaran. (1993). Model of ferroelectric fatigue due to defect/domain interactions. **Ferroelectrics**, 150(1), 199-208.
- Damjanovic, D. (1998). Ferroelectric, dielectric and piezoelectric properties of ferroelectric thin films and ceramics. **Reports on Progress in Physics**, 61, 1267.
- Egerton, L, & Dillon, Dolores M. (1959). Piezoelectric and dielectric properties of ceramics in the system potassium-sodium niobate. **Journal of the American Ceramic Society**, 42(9), 438-442.
- Feng, Z., and Or, S.W. (2009). Phase transition-induced high electromechanical activity in $[(K_{0.5}Na_{0.5})_{1-x}Li_x](Nb_{0.8}Ta_{0.2})O_3$ lead-free ceramic system. **Journal of Alloys and Compounds**, 480(2), L5-L8.
- Guo, Y., Kakimoto, K., and Ohsato, H. (2004). Phase transitional behavior and piezoelectric properties of (NaK) NbO–LiNbO ceramics. **Applied physics letters**, 85, 4121.
- Guo, Y., Kakimoto, K., and Ohsato, H. (2005). $(Na_{0.5}K_{0.5})NbO_3$ - $LiTaO_3$ lead-free piezoelectric ceramics. **Materials Letters**, 59(2-3), 241-244.
- Gusakova, LG, Ishchuk, VM, Kisel, NG, Kuzenko, DV, and Spiridonov, NA. (2010). Modified potassium sodium niobate based lead free piezoceramics. **Functional Materials**, 17(4), 528-532.
- Haertling, Gene H. (1999). Ferroelectric ceramics: history and technology. **Journal of the American Ceramic Society**, 82(4), 797-818.
- Henderson, IR. (2004). Piezoelectric Ceramics: Principles and Applications. **APC international Ltd.**

- Higashide, K., Kakimoto, K., and Ohsato, H. (2007). Temperature dependence on the piezoelectric property of $(1-x)(Na_{0.5}K_{0.5})NbO_3-xLiNbO_3$ ceramics. **Journal of the European Ceramic Society**, 27(13-15), 4107-4110.
- Hollenstein, E., Damjanovic, D., and Setter, N. (2007). Temperature stability of the piezoelectric properties of Li-modified KNN ceramics. **Journal of the European Ceramic Society**, 27(13-15), 4093-4097.
- Hollenstein, E., Davis, M., Damjanovic, D., and Setter, N. (2005). Piezoelectric properties of Li-and Ta-modified $(K_{0.5}Na_{0.5})NbO_3$ ceramics. **Applied physics letters**, 87(18), 182905-182905-182903.
- Inagaki, Y., Kakimoto, K., and Kagomiya, I. (2010). Ferroelectric Domain Characterization of Orthorhombic Sodium–Potassium Niobate Piezoelectric Crystals. **Journal of the American Ceramic Society**.
- Invector. (2006, 2008-12-13). IP Avenger modules now RoHS compliant. Retrieved 12 ມງກນ 2555, from <http://www.invector.se/default.asp>
- Jaffe, Bernard. (1971). **Piezoelectric ceramics** (Vol. 3): Academic press.
- Jones, Jacob L, Hoffman, Mark, and Bowman, Keith J. (2005). Saturated domain switching textures and strains in ferroelastic ceramics. **Journal of applied physics**, 98(2), 024115-024115-024116.
- Juan, D., Jinfeng, W., Guozhong, Z., and Xuijie, Y. (2011). Phase transition behavior and piezoelectric properties of low-Li and high-Sb modified KNN based piezoceramics. **Physica B: Condensed Matter**.
- Kakimoto, K., Akao, K., Guo, Y., and Ohsato, H. (2005). Raman scattering study of piezoelectric $(Na_{0.5}K_{0.5})NbO_3-LiNbO_3$ ceramics. **Japanese journal of applied physics**, 44, 7064.
- Kakimoto, K., Hayakawa, Y., and Kagomiya, I. (2010). Low-Temperature Sintering of Dense $(Na, K)NbO_3$ Piezoelectric Ceramics Using the Citrate Precursor Technique. **Journal of the American Ceramic Society**, 93(9), 2423-2426.
- Kakimoto, K., Imura, T., Fukui, Y., Kuno, M., Yamagiwa, K., Mitsuoka, T., and Ohbayashi, K. (2007). Processing of Piezoelectric $(Li, Na, K)NbO_3$ Porous Ceramics and $(Li, Na, K)NbO_3/KNbO_3$ Composites. **Jpn J Appl Phys**, 46(10), 7089-7093.

- Kakimoto, K., Masuda, I., and Ohsato, H. (2003). Ferroelectric and piezoelectric properties of KNbO₃ ceramics containing small amounts of LaFeO₃. **Japanese journal of applied physics. Pt. 1, Regular papers and short notes**, 42(9), 6102-6105.
- Kakimoto, K.I., Sugiyama, K., and Kagomiya, I. (2010). Direct synthesis of platelet KNbO₃ particles using KNb₃O₈ precursor and KNO₃ self-flux. **Journal of the Ceramic Society of Japan**, 118(1380), 696-700.
- Lin, D., Kwok, K.W., and Chan, H.L. (2009). Effect of Alkali Elements Content on the Structure and Electrical Properties of (K_{0.48}Na_{0.48}Li_{0.04})(Nb_{0.90}Ta_{0.04}Sb_{0.06})O₃ Lead-Free Piezoelectric Ceramics. **Journal of the American Ceramic Society**, 92(11), 2765-2767.
- Littlepc.com. (2003). RoHS Statement of Compliance. Retrieved 15 มกราคม 2555, from <http://www.littlepc.com/rohs.htm>
- Matsubara, M., Yamaguchi, T., Sakamoto, W., Kikuta, K., Yogo, T., and Hirano, S. (2005). Processing and Piezoelectric Properties of Lead-Free (K, Na)(Nb, Ta)O₃ Ceramics. **Journal of the American Ceramic Society**, 88(5), 1190-1196.
- Matthias, BT, and Remeika, JP. (1951). Dielectric properties of sodium and potassium niobates. **Physical Review**, 82, 727-729.
- Mgbemere, H.E., Herber, R.P., and Schneider, G.A. (2009). Investigation of the dielectric and piezoelectric properties of potassium sodium niobate ceramics close to the phase boundary at (K_{0.35}Na_{0.65})NbO₃ and partial substitutions with lithium and antimony. **Journal of the European Ceramic Society**, 29(15), 3273-3278.
- Mgbemere, Henry, Fernandes, Rodrigo P, Hinterstein, Manuel, and Schneider, Gerold A. (2011). Temperature-dependent synchrotron powder diffraction phase studies of (K_{0.37}Na_{0.52}Li_{0.03})(Nb_{0.87}Ta_{0.1}Sb_{0.03})O₃ ferroelectricceramics. **Zeitschrift für Kristallographie**, 226(2), 138-144.
- Muanghlua, R., Niemcharoen, S., Sutapun, M., Boonchom, B., and Vittayakorn, N. (2011). Phase transition behaviour and electrical properties of lead-free (K_{0.5}Na_{0.5})NbO₃-LiNbO₃-LiSbO₃ piezoelectric ceramics. **Current Applied Physics**, 11(3), 434-437.

- Pintilie, L., Vrejoiu, I., Hesse, D., and Alexe, M. (2006). Polarization fatigue and frequency-dependent recovery in Pb (Zr, Ti) O epitaxial thin films with SrRuO electrodes. **Applied physics letters**, 88, 102908.
- Pojprapai, Soodkhet, Russell, Jennifer, Man, Hou, Jones, Jacob L, Daniels, John E, and Hoffman, Mark. (2009). Frequency effects on fatigue crack growth and crack tip domain-switching behavior in a lead zirconate titanate ceramic. **Acta Materialia**, 57(13), 3932-3940.
- Rödel, J., Jo, W., Seifert, K.T.P., Anton, E.M., Granzow, T., and Damjanovic, D. (2009). Perspective on the Development of Lead-free Piezoceramics. **Journal of the American Ceramic Society**, 92(6), 1153-1177.
- Rödel, J., Kounga, A.B.N., Weissenberger-Eibl, M., Koch, D., Bierwisch, A., et al. (2009). Development of a roadmap for advanced ceramics: 2010-2025. **Journal of the European Ceramic Society**, 29(9), 1549-1560.
- Rubio-Marcos, F., Ochoa, P., and Fernandez, JF. (2007). Sintering and properties of lead-free (K, Na, Li)(Nb, Ta, Sb) O₃ ceramics. **Journal of the European Ceramic Society**, 27(13-15), 4125-4129.
- Saito, Y., and Takao, H. (2006). High performance lead-free piezoelectric ceramics in the (K, Na) NbO₃-LiTaO₃ solid solution system. **Ferroelectrics**, 338(1), 17-32.
- Shirane, G, Newnham, R, and Pepinsky, R. (1954). Dielectric Properties and Phase Transitions of NaNbO₃ and (Na, K)NbO₃. **Physical Review**, 96(3), 581.
- Skidmore, T.A., Comyn, T.P., and Milne, S.J. (2010). Dielectric and Piezoelectric Properties in the System:(1-x)[(Na_{0.5}K_{0.5}NbO₃)_{0.93}-(LiTaO₃)_{0.07}]-x[BiScO₃]. **Journal of the American Ceramic Society**, 93(3), 624-626.
- Storr, Wayne. (1999-2013, August 2012). Magnetic Hysteresis. **Electronics Tutorial about Magnetic Hysteresis**. Retrieved 2 September 2013, 2013, from <http://www.electronics-tutorials.ws/electromagnetism/magnetic-hysteresis.html>
- Su, L., Zhu, K., Bai, L., Qiu, J., and Ji, H. (2010). Effects of Sb-doping on the formation of (K, Na)(Nb, Sb)O₃ solid solution under hydrothermal conditions. **Journal of Alloys and Compounds**, 493(1-2), 186-191.
- Thaieeasyelec.com. (2011). RoHS มาตรฐานเพื่อสิ่งแวดล้อม. Retrieved 15 ธันวาคม 2554, from <http://www.thaieeasyelec.com/index.php?lay=show=article&Ntype=1&Id=380010>

Wang, H., Ruan, D., Dai, Y.J., and Zhang, X.W. (2011). Relationship between phase structure and electrical properties of $(K_{0.5}Na_{0.5})NbO_3-LiTaO_3$ lead-free ceramics.

Current Applied Physics.

Wang, K., and Li, J.F. (2010). Domain Engineering of Lead-Free Li-Modified (K, Na) NbO_3 Polycrystals with Highly Enhanced Piezoelectricity. **Advanced Functional Materials**, 20(12), 1924-1929.

Wood, Elizabeth A. (1951). Polymorphism in potassium niobate, sodium niobate, and other ABO_3 compounds. **Acta Crystallographica**, 4(4), 353-362.

Yang, Z., Chang, Y., Liu, B., and Wei, L. (2006). Effects of composition on phase structure, microstructure and electrical properties of $(K_{0.5}Na_{0.5})NbO_3-LiSbO_3$ ceramics. **Materials Science and Engineering: A**, 432(1), 292-298.

Yang, Z., Chang, Y., and Wei, L. (2007). Phase transitional behavior and electrical properties of lead-free $(K_{0.44}Na_{0.52}Li_{0.04})(Nb_{0.96-x}Ta_xSb_{0.04})O_3$ piezoelectric ceramics. **Applied physics letters**, 90(4), 042911-042911-042913.

Yu, Li, Yu, Shou-Wen, and Feng, Xi-Qiao. (2007). Effects of electric fatigue on the butterfly curves of ferroelectric ceramics. **Materials Science and Engineering: A**, 459(1), 273-277.

Zang, G.Z., Wang, J.F., Chen, H.C., Su, W.B., Wang, C.M., Qi, P., et al. (2006). Perovskite $(Na_{0.5}K_{0.5})_{1-x}(LiSb)_xNb_{1-x}O_3$ lead-free piezoceramics. **Applied physics letters**, 88(21), 212908-212908-212903.

Zhang, Chong, Chen, Zhong, Ji, Wei-jing, Wang, Lei, Chen, YB, Yao, et al. (2011). Crystal structures and electrical properties of $(1-x)K_{0.5}Na_{0.5}NbO_3-xBi_{0.8}La_{0.2}FeO_3$ lead-free ceramics. **Journal of Alloys and Compounds**, 509(5), 2425-2429.

Zhang, S., Xia, R., Hao, H., Liu, H., and Shrout, T.R. (2008). Mitigation of thermal and fatigue behavior in KNaNbO-based lead free piezoceramics. **Applied physics letters**, 92, 152904.

Zhang, S., Xia, R., and Shrout, T.R. (2007). Lead-free piezoelectric ceramics vs. PZT? **Journal of Electroceramics**, 19(4), 251-257.

Zhou, Y., Guo, M., Zhang, C., and Zhang, M. (2009). Hydrothermal synthesis and piezoelectric property of Ta-doping $K_{0.5}Na_{0.5}NbO_3$ lead-free piezoelectric ceramic. **Ceramics International**, 35(8), 3253-3258.

Zuo, Ruzhong, Fu, Jian, and Lv, Danya. (2009). Phase Transformation and Tunable Piezoelectric Properties of Lead-Free $(\text{Na}_{0.52}\text{K}_{0.48-x}\text{Li}_x)(\text{Nb}_{1-x-y}\text{Sb}_y\text{Ta}_x)\text{O}_3$ System. **Journal of the American Ceramic Society**, 92(1), 283-285.

Output จากโครงการวิจัย

1. ผลงานตีพิมพ์ในวารสารวิชาการนานาชาติ

ฐานข้อมูล ISI

1. Chunmanus Uthaisar, Puripat Kantha, Rattikorn Yimnirun, **Soodkhet Pojprapai** (2012). Effect of Sintering Temperature of Lead-free $(K_{0.50}Na_{0.46}Li_{0.04})(Nb_{(0.96-x)}Sb_{0.04}Ta_x)O_3$ Ceramics on Piezoelectric Properties. Integrated Ferroelectrics. Vol.149: 114-120. (ภาคผนวกที่ 1: Reprint)
2. Thanakorn Iamsasri, Goknur Tutuncu, Chunmanus Uthaisar, **Soodkhet Pojprapai** and Jacob L. Jones (2013). Analysis methods for characterizing ferroelectric/ferroelastic domain reorientation in orthorhombic perovskite materials and application to Li-doped $Na_{0.5}K_{0.5}NbO_3$. Journal Materials Science. Vol. 48: 6905-6910. (ภาคผนวกที่ 2: Reprint)

2. การนำผลงานวิจัยไปใช้ประโยชน์

- เชิงพาณิชย์
- เชิงนโยบาย
- เชิงสาธารณะ

เชิงวิชาการ

3. ผลงานอื่น ๆ

สิทธิบัตร

การเสนอผลงานในการประชุมสัมมนาระดับชาติ

1. ชื่นมนัส อุทัยสาร์, ฤทธิ์มาศ กลอนโพธิ์, วัฒนา สารก้า, สมฤทธิ์ มาเตเมฆ, สุปราณี สุริวงศ์, สุพัตรา วงศ์แสนใหม่, สุดเขตต์ พจน์ประไพร, พฤติกรรมความล้ำทางไฟฟ้าของเซรามิกเฟอร์โรอิเล็กทริกปราศจากสารตะกั่ว (โพแทสเซียม โซเดียม ในโอเบต, **KNN-Li**). การประชุมวิชาการวิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย ครั้งที่ 36 (วทท 36). **26-28 ตุลาคม 2553.** กรุงเทพ, ประเทศไทย [นำเสนอด้วยโปสเทอร์]
2. Chunmanus Uthaisar, Supatra Wongsaenmai and Soodkhet Pojprapai. **Electrical Fatigue Behavior of Lead-Free Ferroelectric (Potassium Sodium Niobate, KNN) Ceramic.** The 4th Suranaree University of Technology Graduate Conference (SUTGrad4). July 7-8, 2011, Nakhon Ratchasima, Thailand [นำเสนอด้วยวิจารณ์]
3. Chunmanus Uthaisar, Puripat Kantha, Rattikorn Yimnirun, Soodkhet Pojprapai (2012). **Effect of Sintering Temperature of Lead-free ($K_{0.50}Na_{0.46}Li_{0.04}$) $(Nb_{(0.96-x)}Sb_{0.04}Ta_x)O_3$ Ceramics on Piezoelectric Properties.** The INAMM-Special International Workshop and Symposium on Emerging Frontiers in Multiferroics and Electronic Metamaterials. December 9-10, 2012. Pattaya, Thailand [นำเสนอด้วยโปสเทอร์]