



REFERENCES

- Agathopoulos, S., Tulyaganov, D.U., Ventura, J.M.G., Kannan, S., and Ferreira, J.M.F. (2006) Structural analysis and devitrification of glasses based on the CaO-MgO-SiO₂ system with B₂O₃, Na₂O, CaF₂ and P₂O₅ additives. Journal of Non-Crystalline Solids, 352, 322-328.
- Aghdam, R.M., Najarian, S., Shakheshi, S., Khanlari, S., Shaabani, K., and Sharifi, S. (2012) Investigating the effect of PGA on physical and mechanical properties of electrospun PCL/PGA blend nanofibers. Journal of Applied Polymer Science, 124(1), 123-131.
- Ayfer, S., Dolunay, S., Ozlem, C., and Ferdane, Y.K. (2005) The ratio of crystallinity and thermodynamical interactions of polycaprolactone with some aliphatic esters and aromatic solvents by inverse gas chromatography. Polymer Bulletin, 53, 349-357.
- Bang, H.G., Kima S.J., and Park, S.Y. (2008) Biocompatibility and the physical properties of bio-glass ceramics in the Na₂O-CaO-SiO₂-P₂O₅ system with CaF₂ and MgF₂ additives. Journal of Ceramic Processing Research, 9(6), 588-590.
- Bhattarai, N., Edmondson, D., Veisoh, O., Matsen, F. A., and Zhang, M. (2005) Electrospun chitosan-based nanofibers and their cellular compatibility Biomaterials, 26(31), 6176-6184.
- Bose, S., and Saha, S.K. (2003) Synthesis of hydroxyapatite nanopowders via sucrose-templated sol-gel method. Journal of American Ceramic Society, 86(6), 1055-1057.
- Chen, G.Q. and Wu, Q. (2005) The application of polyhydroxyalkanoates as tissue engineering materials. Biomaterials, 26, 6565-6578.
- Chen, J., Shapiro, H.S., and Sodek, J. (1992) Developmental expression of bone sialoprotein mRNA in rat mineralized connective tissues. Journal of Bone and Mineral Research, 7, 987-997.
- Chim, H., Hutmacher, D. W., Chou, A. M., Oliveira, A. L., Reis, R. L., Lim. T. C., and Schantz, J. T. (2006) A comparative analysis of scaffold material

- modifications for load-bearing applications in bone tissue engineering. *International Journal of Oral and Maxillofacial Surgery*, 35, 928-934.
- Choi, J.S., Lee, S.J., Christ, G.J., Atala, A., and Yoo, J.J. (2008) The influence of electrospun aligned poly(ϵ -caprolactone)/collagen nanofiber meshes on the formation of self-aligned skeletal muscle myotubes. *Biomaterials*, 29, 2899-2906.
- Cooke, M.N., Fisher, J.P., Dean, D., Rimnac, C., and Mikos, A.G. (2003) Use of stereolithography to manufacture critical-sized 3D biodegradable scaffolds for bone ingrowth. *Journal of biomedical materials research. Part B, Applied Biomaterials*, 64(2), 65-69.
- Coombes, A.G. and Heckman, J.D. (1992) Gel casting of resorbable polymers. I. Processing and applications. *Biomaterials*, 13(4), 217-224.
- Coombes, A.G., Rizzi, S.C., Williamson, M., Barralet, J.E., Downes, S., and Wallace, W.A. (2004) Precipitation casting of polycaprolactone for applications in tissue engineering and drug delivery. *Biomaterials*, 25(2), 315-325.
- Chun, Y.S. and Kim, W.N. (2000) Thermal properties of poly(hydroxybutyrate-co-hydroxyvalerate) and poly(ϵ -caprolactone) blends. *Polymer*, 41, 2305-2308.
- Dai, N.T., Yeh, M.K., Liu, D.D., Adams, E.F., Chiang, C.H., Yen, C.Y., Shih, C.M., Sytwu, H.K., Chen, T.M., Wang, H.J., Williamson, M.R., and Coombes, A.G. (2005) A co-cultured skin model based on cell support membranes. *Biochemical and Biophysical Research Communications*, 329(3), 905-908.
- Doshi, J. and Reneker, D.H. (1995) Electrospinning process and applications of electrospun fibers. *Journal of Electrostatics*, 35, 151-160.
- Fang, R., Zhang, E., Xu, L., and Wei, S. (2010) Electrospun PCL/PLA/HA based nanofibers as scaffold for osteoblast-like cells. *Journal of Nanoscience and Nanotechnology*, 10(11), 7747-7751.
- Fujihara, K., Kotaki, M., and Ramakrishna, S. (2005) Guided bone regeneration membrane made of polycaprolactone/calcium carbonate composite nanofibers. *Biomaterials*, 26(19), 4139-4147.

- Gogolewski, S. and Pennings, A.J. (1983) An artificial skin based on biodegradable mixtures of polylactides and polyurethanes for full-thickness skin wound covering. Makromolekular Chemistry Rapid Communications, 4, 675-680.
- Goldberg, H.A., Warner, K.J., Li, M.C., and Hunter, G.K. (2001) Binding of bone sialoprotein, osteopontin and synthetic polypeptides to hydroxyapatite. Connective Tissue Research, 42, 25-37.
- Goldberg, H.A., Baht, G., Gordon, J., Pitelka, V., Chen, H., Holdsworth, D., and Hunter, G.K. (2008) Bone Repair Mediated by Bone Sialoprotein. European Cells and Materials, 16(4), 47-55.
- Goldstein, A.S., Zhu, G., Morris, G.E., Meszlenyi, R.K., and Mikos, A.G. (1999) Effect of osteoblastic culture conditions on the structure of poly(DL-lactic-co-glycolic acid) foam scaffolds. Tissue Engineering, 5(5), 421-434.
- Guo, L.F., Zhang, W.G., and Wang, C.T. (2004) Preparation and crystallization control of nanoparticle hydroxyapatite. Journal of University of Science and Technology, 11(5), 449-454.
- Hill, R.G., Stamboulis, A., Law, R.V., Clifford, A., Towler, M.R. (2004) The influence of strontium substitution in fluorapatite glasses and glass-ceramics. Journal of Non-Crystalline Solids, 336, 223-229.
- Hocking, P.J. and Marchessault, R.H. (1994) Chemistry and technology of biodegradable polymers. New York: Blackie Academic & Professional.
- Hollinger, J.O. and Leong, K. (1996) Poly(alpha-hydroxy acids): carriers for bone morphogenetic proteins. Biomaterials, 17(2), 187-194.
- Hu, Y., Grainger, D.W., Winn, S.R., and Hollinger, J.O. (2002) Fabrication of poly(alpha-hydroxy acid) foam scaffolds using multiple solvent systems. Journal of Biomedical Materials Research, 59(3), 563-572.
- Hutmacher, D.W. (2001) Scaffold design and fabrication technologies for engineering tissues--state of the art and future perspectives. Journal of Biomaterials Science – Polymer Edition, 12(1), 107-124.
- Hynes, R. (1990) Structure of fibronectins. New York: Springer.
- Hynes, R. (1990) Distribution of Fibronectins in vivo: Plasma. New York: Springer.

- Junqueira, L.C. and Carneiro, J. (2003) Basic Histology: Text & Atlas. New York: Lange Medical Books McGraw-Hill.
- Kim, M.S., Jun, I., Shin, Y.M., Jang, W., Kim, S.I., and Shin, H. (2010) The development of genipin-crosslinked poly(caprolactone) (PCL)/gelatin nanofibers for tissue engineering applications. Macromolecular Bioscience, 10, 91-100.
- Koombhongse, S. (2001) The formation of nanofibers from electrospinning process. Doctoral Dissertation. The University of Akron.
- La Cara, F., Immirzi, B., Ionata, E., Mazzella, A., Portofino, S., Orsello, G., De Prisco, P.P. (2003) Biodegradation of poly-e-caprolactone/poly-b-hydroxybutyrate blend. Polymer Degradation and Stability, 79, 37-43.
- Lee, S.J. and Oh, S.H. (2003) Fabrication of calcium phosphate bioceramics by using eggshell and phosphoric acid. Materials Letters, 57(29), 4570-4574.
- Li, M., Mondrinos, M.J., Gandhi, M.R., Ko, F.K., Weiss, A.S., and Lelkes, P.I. (2005) Electrospun protein fibers as matrices for tissue engineering. Biomaterials, 26(30), 5999-6008.
- Li, W.J., Tuli, R., Okafor, C., Derfoul, A., Danielson, K.G., Hall, D.J., and Tuan, R.S. (2005) A three-dimensional nanofibrous scaffold for cartilage tissue engineering using human mesenchymal stem cells. Biomaterials, 26(6), 599-609.
- Liu, R.F., Xiao, X.F., and Ni, J. (2003) Study on kinetics of hydrothermal synthesis of hydroxyapatite powders. Chinese Journal of Inorganic Chemistry, 19(10), 1079-1084.
- Lo, H., Kadiyala, S., Guggino, S.E., and Leong, K.W. (1996) Poly(L-lactic acid) foams with cell seeding and controlled-release capacity. Journal of Biomedical Materials Research, 30(4), 475-484.
- Matsumoto, T., Okazaki, M., Inoue, M., Yamaguchi, S., Kusunose, T., Toyonaga, T., Hamada, Y., and Takahashi, J. (2004) Hydroxyapatite particles as a controlled release carrier of protein. Biomaterials, 25, 3807-3812.
- Matsuura, H., Takio, K., Titani, K., Greene, T., Levery, S.B., Salyan, M.E., and Hakomori, S. (1988) The oncofetal structure of human fibronectin defined by monoclonal antibody FDC-6. Unique structural requirement for the

- antigenic specificity provided by a glycosylhexapeptide. Journal of Biological Chemistry, 263, 3314-3322.
- Mauney, J.R., Jaquiéry, C., Volloch, V., Heberer, M., Martin, I., and Kaplan, D.L. In vitro and in vivo evaluation of differentially demineralized cancellous bone scaffolds combined with human bone marrow stromal cells for tissue engineering. Biomaterials, 26(16), 3173-3185.
- Miao, L., Qiu, Z., and Ikehara, T. (2008) Fully biodegradable poly(3-hydroxybutyrate-co-hydroxyvalerate)/poly(ethylene succinate) blends: Phase behavior, crystallization and mechanical properties. Reactive and Functional Polymers, 68, 446-457.
- Michelson, D. (1990) Electrostatic Atomization. New York: Adam Hilger.
- Mikos, A.G., Bao, Y., Cima, L.G., Ingber, D.E., Vacanti, J.P., and Langer, R. (1993) Preparation of poly(glycolic acid) bonded fiber structures for cell attachment and transplantation. Journal of Biomedical Materials Research, 27(2), 183-189.
- Mohanty, A.K., Misra, M., and Hinrichsen, G. (2000) Biofibers, biodegradable polymers and biocomposites: An overview. Macromolecular Materials and Engineering, 276, 1-24.
- Mooney, D.J., Baldwin, D.F., Suh, N.P., Vacanti, J.P., and Langer, R. (1996) Novel approach to fabricate porous sponges of poly(D,L-lactic-co-glycolic acid) without the use of organic solvents. Biomaterials, 17(14), 1417-1422.
- Moursi, A.M., Globus, R.K., and Damsky, C.H. (1997) Interactions between integrin receptors and fibronectin are required for calvarial osteoblast differentiation in vitro. Journal of Cell Science, 110, 2187-2196.
- Nakahira, A., Sakamoto, K., Yamaguchi, S., Kaneno, M., Takeda, S., and Okazaki, M. (1999) Novel synthesis method of hydroxyapatite whiskers by hydrolysis of α -tricalcium phosphate in mixtures of water and organic solvent. Journal of American Ceramic Society, 82(8), 2029-2032.
- Nam, Y.S., Yoon, J.J., and Park, T.G. (2000) A novel fabrication method of macroporous biodegradable polymer scaffolds using gas foaming salt as a porogen additive. Journal of Biomedical Materials Research, 53(1), 1-7.

- Niehaus, A.J., Anderson, D.E., Samii, V.F., Weisbrode, S.E., Johnson, J.K., Noon, M.S., Tomasko, D.L., and Lannutti, J.J. (2009) Effects of orthopedic implants with a polycaprolactone polymer coating containing bone morphogenetic protein-2 on osseointegration in bones of sheep. American Journal of Veterinary Research, 70, 1416-1425.
- Nisbet, D.R., Forsythe, J.S., Shen, W., Finkelstein, D.I., and Horne, M.K. (2009) Review paper: a review of the cellular response on electrospun nanofibers for tissue engineering. Journal of Biomaterials Applications, 24, 7-29.
- Porter, A.E., Botelho, C.M., Lopes, M.A., Santos, J.D., Best, S.M., and Bonfield, W. (2004) Ultrastructural comparison of dissolution and apatite precipitation on hydroxyapatite and silicon-substituted hydroxyapatite *in vitro* and *in vivo*. Journal of Biomedical Materials Research Part A, 69(4), 670-679.
- Porter, J.R., Ruckh, T.T., and Popat, K.C (2009) Bone Tissue Engineering: A Review in Bone Biomimetics and Drug Delivery Strategies. Biotechnology Progress, 25, 1539-1560.
- Reneker, D.H., Yarin, A.L., Fong, H., and Koombhongse, S. (2000) Bending instability of electrically charged liquid jets of polymer solutions in electrospinning. Journal of Applied Physics, 87 (9), 4531-4546.
- Schindler, A., Jeffcoat, R., and Kimmel, G.L. (1977) Biodegradable Polymers for Sustained Drug Delivery. New York: Plenum Press.
- Shin, Y.M., Hohman, M.M., Brenner, M.P., and Rutledge, G.C. (2001) Experimental characterization of electrospinning: the electrically forced jet and instabilities. Polymer, 42, 9955-9967.
- Sun, M., Kingham, P.J., Reid, A.J., Armstrong, S.J., Terenghi, G., and Downes, S. (2010) In vitro and in vivo testing of novel ultrathin PCL and PCL/PLA blend films as peripheral nerve conduit. Journal of Biomedical Materials Research Part A, 93(4), 1470-1481.
- Taylor, G. (1969) Electrically Driven Jets. Proceedings of the Royal Society A London, 313, 453-475.
- Tong, H.W., Wang, M., and Lu, W.W. (2011) In vitro biological evaluation of fibrous PHBV polymer and CHA/PHBV nanocomposite scaffolds

- developed for tissue engineering applications. Bioceramics Development and Applications, 1, 1-3.
- Venugopal, J., Prabhakaran, M.P., Zhang, Y., Low, S., Choon, A.T., Ramakrishna, S. (2010) Biomimetic hydroxyapatite-containing composite nanofibrous substrates for bone tissue engineering. Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Science, 368, 2065-2081.
- Wang, B., Teng, L.R., Wang, C.Y., Meng, Q.F., Zhao, L.Z., and Gao, B. (2003) Protein adsorption onto nanosized hydroxyapatite particles for controlled drug release. Chemical Research in Chinese Universities, 23(3), 254-257.
- Wang, H.S., Fu, G.D., and Li, X.S. (2009) Functional polymeric nanofibers from electrospinning. Nanotechnology, 3, 21-31.
- Whang, K., Thomas, C.H., Healy, K.E., and Nuber, G. (1995) A novel method to fabricate bioabsorbable scaffolds. Polymer, 36, 837-842.
- Wolfe, M.W., Salkeld, S.L., and Cook, S.D. (1999) Bone morphogenetic proteins in the treatment of non-unions and bone defects: Historical perspective and current knowledge. The University of Pennsylvania Orthopaedic Journal, 12, 1-6.
- Xu, C.Y., Inai, R., Kotaki, M., and Ramakrishna, S. (2004) Aligned biodegradable nanofibrous structure: a potential scaffold for blood vessel engineering. Biomaterials, 25(5), 877-886.
- Yoshimoto, H., Shin, Y.M., Terai, H., and Vacanti, J.P. (2003) A biodegradable nanofiber scaffold by electrospinning and its potential for bone tissue engineering. Biomaterials, 24(12), 2077-2082.
- Yoon, C.S. and Ji, D.S. (2005) Effects of *in vitro* degradation on the weight loss and tensile properties of PLA/LPCL/HPCL blend fibers. Fibers and Polymers, 6, 13-18.
- Zein, I., Hutmacher, D.W., Tan, K.C., and Teoh, S.H. (2002) Fused deposition modeling of novel scaffold architectures for tissue engineering applications. Biomaterials, 23(4), 1169-1185.
- Zhang, Y., Ouyang, H., Lim, C.T., Ramakrishna, S., and Huang, Z.M. (2005) Electrospinning of gelatin fibers and gelatin/PCL composite fibrous

scaffolds. Journal of biomedical materials research. Part B, Applied Biomaterials, 72(1), 156-165.

CURRICULUM VITAE

Name: Ms. Prae-ravee K-hasuwan

Date of Birth: November 3, 1985

Nationality: Thai

University Education:

2004–2007 Bachelor Degree of Science (Chemistry), Faculty of Science, Kasetsart University, Bangkok, Thailand

Publications:

1. K-hasuwan, P.; Meng, L.H.; Supaphol, P.; and Wnek, G.E. Phase-transition of poly(acrylic acid) fibrous nanotubes. In preparation.
2. K-hasuwan, P.; Supaphol, P.; and Wnek, G.E. Electrospun doxycycline-loaded poly(ϵ -caprolactone)/poly(3-hydroxybutyrate-co-3-hydroxyvalerate) composite fibrous substrates as wound dressings. In preparation.
3. K-hasuwan, P.; Pavasant, P.; and Supaphol, P. Biocompatible evaluation in vitro of poly(ϵ -caprolactone)/poly(3-hydroxybutyrate-co-3-hydroxyvalerate) fibrous substrates filled with protein-loaded hydroxyapatite particles. In preparation.
4. K-hasuwan, P.; Kuanchertchoo, N.; Pavasant, P.; and Supaphol, P. Hydroxyapatite/ovalbumin composite particles as model protein carriers for bone tissue engineering: II. Release of ovalbumin. Material Science and Engineering C: Materials for Biological Applications, Submitted.
5. K-hasuwan, P.; Kuanchertchoo, N.; Vejpravit, N.; and Supaphol, P. Hydroxyapatite/ovalbumin composite particles as model protein carriers for bone tissue engineering: I. Synthesis and characterization. Material Science and Engineering C: Materials for Biological Applications, Accepted.
6. K-hasuwan, P.; Pavasant, P.; and Supaphol, P. (2011) Effect of the surface topography of electrospun poly(ϵ -caprolactone)/poly(3-hydroxybutyrate-co-3-hydroxyvalerate) fibrous substrates on cultured bone cell behavior. Langmuir, 27, 10938-10946.



Presentations:

1. K-hasuwan, P.; Kuanchertchoo, N.; and Supaphol, P. (2010, November 14-18) Synthesis of protein-incorporated hydroxyapatite particles for biomedical applications. Poster presented at 3rd International Congress on Ceramics, Osaka, Japan.
2. K-hasuwan, P.; Chaisuntharanon, S.; Pavasant, P.; and Supaphol, P. (2012, August 20-23) Biological responses of MC3T3-E1 cultured on Poly(ϵ -caprolactone) sponge scaffolds filled with crude bone protein-loaded hydroxyapatite nanoparticles. Orally presented at IEEE 12th International Conference on Nanotechnology, Birmingham, United Kingdom.