

FISO Technologies Inc. is a pioneer in the introduction of fiber-optic sensing technologies to medical applications and has built a strong reputation in laboratories and medical research centers with the versatility of solutions provided.

This White Paper is a selected list of publications from researchers between 2000-2016 utilizing FISO's pressure or temperature sensors for medical applications.

## Pressure & Temperature Sensors

### Refereed Papers

1. Kong D.R., He B.B., Wu A.J., Wang J.G., Yu F.F., & Xu J.M. (2013). **Fiberoptic sensor for noninvasive measurement of variceal pressure.** Endoscopy, 45(S 02), E55-E56.
2. Pinet É. (2009). **Fabry-Pérot Fiber optic sensors for physical parameters measurement in challenging conditions.** Journal of Sensors Vol 2009 ID720980
3. Hamel C., & Pinet É. (2006). **Temperature and pressure fiber-optic sensors applied to minimally invasive diagnostics and therapies.** Biomedical Optics 2006, pp. 608306-608306.

### Conference Papers

4. Pinet É, and Hamel C. (2007, July). **True challenges of disposable optical fiber sensors for clinical environment.** Third European Workshop on Optical Fibre Sensors, vol. 6619 of Proceedings of SPIE, pp. 1-4, Napoli, Italy.

## Pressure Sensors

### General

#### Conference Papers

5. Pinet É. (2011). **Pressure measurement with fiber-optic sensors: Commercial technologies and applications.** Invited Paper. 21st International Conference on Optical Fiber Sensors, edited by Wojtek J. Bock, Jacques Albert, Xiaoyi Bao, Proc. of SPIE Vol. 7753, 775304.
6. Sven Poeggel, Daniele Tosi, DineshBabu Duraibabu, Gabriel Leen, Deirdre McGrath, Elfed Lewis. (2015). **Optical Fibre Pressure Sensors in Medical Applications.** Sensors 2015, 15, 17115-17148.

## Otology

### Refereed Papers

7. IngoTodt, A. Ernst, P. Mittmann. (2016), **Effects of different insertion techniques of a cochlear implant electrode on the intracochlear pressure.** *Otology & Neurotology* 2016;21:30–37
8. Jameson K. Mattingly, Nathaniel T. Greene, Herman A. Jenkins, Daniel J. Tollin, James R. Easter, Stephen P. Cass. (2015). **Effects of skin thickness on cochlear input signal using transcutaneous bones conduction implants.** *Otology & Neurotology* 2015 Sept; 36(8):1403-11.
9. Nathaniel T. Greene, Jameson K. Mattingly, Herman A. Jenkins, Daniel J. Tollin, James R. Easter, Stephen P. Cass. (2015) **Cochlear implant Electrode Effect on Sound Energy Transfer within the Cochlea during Acoustic stimulation.** *Otology & Neurotology* 2015 Sep; 36(9):1554-61.
10. James R. Easter. (2015), **Mechanisms and Mitigation of Hearing Loss from Blast Injury.** U.S. Army Medical Research and Materiel Command, Annual rept.

## Ophthalmology

### Refereed Papers

11. Ma J.J., Bellevile C., Nouri M., Ahmed E., & Dohlman C.H. (2003). **Interferometry for a Noncontact, in vivo Method to Measure Intraocular Pressure using Silicone MEMS (Micro-electromechanical Systems) Photolithography Based Chips on a Keratoprosthesis (Kpro).** *Investigative Ophthalmology and Visual Science*, 44(5), 4703.
12. Ohnuma, O., et al. (2006). **Intraocular pressure change during phacoemulsification and aspiration.** *Journal of the Eye* 23(9), 1225.
13. Senatorov, V., Malyukova, I., Fariss, R., Wawrousek, E. F., Swaminathan, S., Sharan, S. K., & Tomarev, S. (2006). **Expression of mutated mouse myocilin induces open-angle glaucoma in transgenic mice.** *The Journal of neuroscience*, 26(46), 11903-11914.
14. Zhong L., Bradley J., Schubert W., Ahmed E., Adamis A.P., Shima D.T., ... & Ng Y.S. (2007). **Erythropoietin promotes survival of retinal ganglion cells in DBA/2J glaucoma mice.** *Investigative ophthalmology & visual science*, 48(3), 1212-1218.
15. Zhou Y., Grinchuk O., & Tomarev S. I. (2008). **Transgenic mice expressing the Tyr437His mutant of human myocilin protein develop glaucoma.** *Investigative ophthalmology & visual science*, 49(5), 1932-1939.
16. Ahmed E., Ma J., Rigas I., Hafezi-Moghadam N., Iliaki E., Gragoudas E. S., ... & Adamis A. P. (2003). **Non-invasive tonometry in the mouse.** *Investigative Ophthalmology and Visual Science*, 44(5), 3336.
17. Filippopoulos, T., Matsubara, A., Danias, J., Huang, W., Dobberfuhr, A., Ren, L., ... & Grosskreutz, C. L. (2006). **Predictability and limitations of non-invasive murine tonometry: comparison of two devices.** *Experimental eye research*, 83(1), 194-201.
18. Chi Z.L., Akahori M., Obazawa M., Minami M., Noda T., Nakaya N., ... & Iwata T. (2010). **Overexpression of optineurin E50K disrupts Rab8 interaction and leads to a progressive retinal degeneration in mice.** *Human molecular genetics*, 19(13), 2606-2615.

## Cardiology

### Refereed Papers

19. Pinet É, Pham A., and Rioux S. (2005, August). **Miniature fiber optic pressure sensor for medical applications: an opportunity for intra-aortic balloon pumping (IABP) therapy.** *17<sup>th</sup> International Conference on Optical Fibre Sensors*, vol. 5855 of *Proceedings of SPIE*, pp. 234–237, Bruges, Belgium.
20. Konieczny G., Opilski Z., Pustelny T., & Maciak E. (2009). **State of the work diagram of the artificial heart.** *Acta Physica Polonica-Series A General Physics*, 116(3), 344.
21. Konieczny G., Opilski Z., Pustelny T., Maciak E. (2008). **Fiber Pressure Sensor for the Polvad Prosthesis.** *Molecular and Quantum Acoustics*, vol. 29, pages 135-141.
22. Konieczny G., Opilski Z., Pustelny T., Gacek A., Gibinski P., Kustosz R. (2010). **Results of Experiments with Fiber Pressure Sensor Applied in the Polish Artificial Heart Prosthesis.** *Acta Physica Polonica A*, 118(6), 1183-1185.
23. Arunark Kolipaka, Philip A. Araoz, Kiaran P. McGee, Armando Manduca, Richard L. Ehman. (2010). **Magnetic Resonance Elastography as a Method for the Assessment of Effective Myocardial Stiffness throughout the Cardiac Cycle.** *Magn Reson Med.* 64(3) : 862-870.
24. Machino-Ohtsuka Tomoko, Tajiri Kazuko, Kimura Taizo, Sakai Satoshi, Sato Akira, Yoshida Toshimichi, Hiroe Michiaki, Yasutomi Yasuhiro, Aonuma Kazutaka, Imanaka-Yoshida Kyoko. (2014). **Tenascin-C Aggravates Autoimmune Myocarditis via Dendritic Cell Activation and Th17 Cell Differentiation.** *Journal of American Heart Association*, 2014; 3:e001052; doi: 10.1161 / JAHA.114.001052.
25. Laksari, K., Agah, M. R., Rachev, A., & Darvish, K. (2012, March). **Investigating the effects of dynamic and static loading on the stability of porcine aorta.** *Bioengineering Conference (NEBEC), 38<sup>th</sup> Annual Northeast* (pp. 205-206). IEEE.
26. Romanov, V. V., Darvish, K., & Assari, S. (2010, January). **Characterization of Material Properties of Aorta from Oscillatory Pressure Tests.** In *26<sup>th</sup> Southern Biomedical Engineering Conference SBEC 2010*, April 30-May 2, 2010, College Park, Maryland, USA (pp. 380-384). International Society for Optics and Photonics.
27. Ping Zhang, Min Su, Yunlong Liu, Andrew Hsu, Hiroki Yokota. (2007). **Knee Loading Dynamically Alters Intramedullary Pressure in Mouse Femora.** *Bone*, 40(2) : 538-543.

### Conference Papers

28. Tsuchimochi H., Inagaki T., Shirai M. (2015, March). **Importance of body temperature control for the evaluation of cardiac function in anesthetized mice.** In *92nd Annual Meeting of the Physiological Society of Japan*, March 21-23, 2015, Kobe, Japan (P-219).
29. Nezu Akihiro, Morita Takao, Tojyo Yosuke, Nagai Takeharu, Tanimura Akihiko (2015, March). **Tissue-wide synchronization of Ca<sup>2+</sup> oscillations induced by acetylcholine in submandibular gland in live animals.** In *88th Annual Meeting of the Japanese Pharmacology Society*, March 18-20, 2015, Nagoya, Japan (P2-86).

## Intracranial

### Refereed Papers

30. Chavko M, Koller WA, Prusaczyk WK, McCarron RM. (2007). **Measurement of blast wave by a miniature fiber optic pressure transducer in the rat brain.** J Neurosci Methods, 159(2): 277-81.
31. Richard A. Bauman, Geoffrey Ling, Lawrence Tong, Adolph Januszkiewicz, Denes Agoston, Nihal Delanerolle, Young Kim, Dave Ritzel, Randy Bell, James Ecklund, Rocco Armonda, Faris Bandak, Steven Parks (2009). **An Introductory Characterization of a Combat-Casualty-Care Relevant Swine Model of Closed Head Injury Resulting from Exposure to Explosive Blast.** Journal of Neurotrauma, 26(6): 841-860.
32. Dal Cengio Leonardi A, Keane N.J., Bir C.A., Ryan A.G., Xu L., VandeVord P.J. (2012). **Head orientation affects the intracranial pressure response resulting from shock wave loading in the rat.** Journal of Biomechanics, 45(15), 2595-602.
33. Dal Cengio Leonardi A, Bir C, Ritzel D, VandeVord P. (2011). **Intracranial pressure increases during exposure to a shock wave.** Journal of Neurotrauma, 28(1), 85-94.

## Temperature Sensors

### General

#### Conference Papers

34. d'Ambrosio G., De Prisco G., Massa, R. (2002, June). **Design, Construction, and Testing of the In Vitro Exposure System for the European "CEMFEC" Project.** Bioelectromagnetics Society Annual Meeting, Quebec City, Canada.
35. Fan M., Xu S., Xia S., Zhang X. (2008). **Preparation of solidroside nano-liposomes by ethanol injection method and in vitro release study.** European Food Research and Technology, Volume 227, Issue 1, pp 167-174.
36. Fan M., Xu S., Xia S., Zhang X. (2007). **Effect of Different Preparation Methods on Physicochemical Properties of Solidroside Liposomes.** J. Agric. Food Chem., 55 (8), pp 3089–3095.
37. Jae-Won Ha, Sang-Ryeol Ryu, Dong-Hyun Kang. (2012). **Evaluation of Near-Infrared Pasteurization in Controlling *Escherichia coli* O157:H7, *Salmonella enterica* Serovar Typhimurium, and *Listeria monocytogenes* in Ready-To-Eat Sliced Ham.** Appl Environ Microbiology, 78(18): 6458–6465.

## Electric field

### Refereed Papers

38. Chen X, James Swanson R, Kolb JF, Nuccitelli R, Schoenbach KH. (2009). **Histopathology of normal skin and melanomas after nanosecond pulsed electric field treatment.** Melanoma Research, 19(6):361-71.
39. Sun Ja Kim, T. H. Chung, S. H. Bae, and S. H. Leem. (2009). **Bacterial inactivation using atmospheric pressure single pin electrode microplasma jet with a ground ring.** Appl. Phys. Lett. 94, 141502.

## MRI / Radiofrequency / Radiation Therapy

### Refereed Papers

40. Sally J. DeNardo, Gerald L. DeNardo, Arutselvan Natarajan, Laird A. Miers, Allan R. Foreman, Cordula Gruettner, Grete N. Adamson, Robert Ivkov. (2007). **Thermal Dosimetry Predictive of Efficacy of <sup>111</sup>In-ChL6 Nanoparticle AMF-Induced Thermoablative Therapy for Human Breast Cancer in Mice.** J Nucl Med, vol. 48 no. 3 437-444.
41. Zhai Y., Xie H., Gu H. (2009). **Effects of hyperthermia with dextran magnetic fluid on the growth of grafted H22 tumor in mice.** International Journal of Hyperthermia, Vol. 25, No. 1: Pages 65-71.
42. Nobuhisa Tajiri, Takao Hiraki, Hidefumi Mimura, Hideo Gobara, Takashi Mukai, Soichiro Hase, Hiroyasu Fujiwara, Toshihiro Iguchi, Jun Sakurai, Motoi Aoe, Yoshifumi Sano, Hiroshi Date, Susumu Kanazawa. (2008). **Measurement of Pleural Temperature During Radiofrequency Ablation of Lung Tumors to Investigate Its Relationship to Occurrence of Pneumothorax or Pleural Effusion.** CardioVascular and Interventional Radiology, Volume 31, Issue 3, pp 581-586.
43. Saman Nazarian, Aravindan Kolandaivelu, Menekhem M. Zviman, Glenn R. Meininger, Ritsushi Kato, Robert C. Susil, Ariel Roguin, Timm L. Dickfeld, Hiroshi Ashikaga, Hugh Calkins, Ronald D. Berger, David A. Bluemke, Albert C. Lardo, and Henry R. Halperin. (2008). **Feasibility of Real-Time Magnetic Resonance Imaging for Catheter Guidance in Electrophysiology Studies.** Circulation, 118:223-229.
44. Raval, A. N., Karmarkar, P. V., Guttman, M. A., Ozturk, C., DeSilva, R., Aviles, R. J., Wright, V. J., Schenke, W. H., Atalar, E., McVeigh, E. R. and Lederman, R. J. (2006). **Real-time MRI guided atrial septal puncture and balloon septostomy in swine.** Cathet. Cardiovasc. Intervent., 67: 637-643.
45. Tomoyoshi Seto, Makoto Takenoshita, Yoshihisa Fujino, Shuichi Nosaka. (2004). **New MR-Compatible Thermometer for MR-Guided Surgery.** Anesthesiology, 101: A539.
46. Torsten Sommer, Christian Vahlhaus, Gerhard Lauck, Alexander v. Smekal, Marcus Reinke, Ulrich Hofer, Wolfgang Block, Frank Träber, Christian Schneider, Jürgen Gieseke, Werner Jung, and Hans Schild. (2000). **MR Imaging and Cardiac Pacemakers: In Vitro Evaluation and in Vivo Studies in 51 Patients at 0.5 T.** Radiology, 215:3 869-879.

47. Ariel Roguin, Menekhem M. Zviman, Glenn R. Meininger, E. Rene Rodrigues, Timm M. Dickfeld, David A. Bluemke, Albert Lardo, Ronald D. Berger, Hugh Calkins, and Henry R. Halperin. (2004). **Modern Pacemaker and Implantable Cardioverter/Defibrillator Systems Can Be Magnetic Resonance Imaging Safe: In Vitro and In Vivo Assessment of Safety and Function at 1.5 T.** *Circulation*, 110: 475-482.
48. Babsky A., Hekmatyar S.K., Gorski T., Nelson D.S., Bansal N. (2005). **Heat-induced changes in intracellular Na<sup>+</sup>, pH and bioenergetic status in superfused RIF-1 tumour cells determined by <sup>23</sup>Na and <sup>31</sup>P magnetic resonance spectroscopy.** *International Journal of Hyperthermia*. Vol. 21, No. 2, Pages 141-158.
49. Imran B. Akca, Onur Ferhanoglu, Christopher J. Yeung, Sevin Guney, T. Onur Tasci, and Ergin Atalar. (2007). **Measuring Local RF Heating in MRI: Simulating Perfusion in a Perfusionless Phantom.** *Journal of Magnetic Resonance Imaging*, 26:1228–1235.
50. Naehle CP, Meyer C, Thomas D, Remerie S, Krautmacher C, Litt H, Luechinger R, Fimmers R, Schild H, Sommer T. (2008). **Safety of brain 3-T MR imaging with transmit-receive head coil in patients with cardiac pacemakers: pilot prospective study with 51 examinations.** *Radiology*, 249:991-1001.
51. Akca I., Tasci T.O., Ferhanoglu O., Bacanli D., Yeung C., Atalar E. (2006). **Measuring Local RF Heating in MRI: Simulating Perfusion in a Perfusionless Phantom.** *Proc. Intl. Soc. Mag. Reson. Med.* 14: 2043.
52. Ivkov R, DeNardo SJ, Daum W, Foreman A, Goldstein R, DeNardo GL. (2005). **Application of high amplitude alternating magnetic fields for heat induction of nanoparticles localized in cancer.** *Clin Cancer Research*, 11: 7093s–7103s.
53. Ruizhi Xu, Yu Zhang, Ming Ma, Jingguang Xia. (2007). **Measurement of Specific Absorption Rate and Thermal Simulation for Arterial Embolization Hyperthermia in the Maghemite-Gelled Model.** *IEEE Transactions on Magnetics*, vol. 43, pp 1078-1085.
54. Hrushikesh M. Joshi, Yen Po Lin, Mohammed Aslam, P. V. Prasad, Elise A. Schultz-Sikma, Robert Edelman, Thomas Meade, Vinayak P. Dravid. (2009). **Effects of Shape and Size of Cobalt Ferrite Nanostructures on Their MRI Contrast and Thermal Activation.** *J. Phys. Chem. C*, 113 (41), pp 17761–17767.
55. Jiwei Liu, Yu Zhang, Chunyu Wang, Ruizhi Xu, Zhongping Chen, Ning Gu. (2010). **Magnetically Sensitive Alginate-Templated Polyelectrolyte Multilayer Microcapsules for Controlled Release of Doxorubicin.** *J. Phys. Chem. C*, 114 (17), pp 7673–7679.
56. DeNardo SJ, DeNardo GL, Miers LA, Natarajan A, Foreman AR, Gruettner C, Adamson GN, Ivkov R. (2005). **Development of tumor targeting bioprobes (<sup>111</sup>In-chimeric L6 monoclonal antibody nanoparticles) for alternating magnetic field cancer therapy.** *Clin Cancer Research* 11: 7087s–7092s.
57. Anilchandra Attaluri, Sri Kamal Kandala, Michele Wabler, Haoming Zhou, Christine Cornejo, Michael Armour, Mohammad Hedayati, Yonggang Zhang, Theodore L. DeWeese, Cila Herman, and Robert Ivkov. **Magnetic nanoparticle hyperthermia enhances radiation therapy: A study in mouse models of human prostate cancer.** *Int J Hyperthermia*. 2015 June; 31(4): 359–374.



58. Mohammad Hedayati, Owen Thomas, Budri Abubaker-Sharif, Haoming Zhou, Christine Cornejo, Yonggang Zhang, Michele Wabler, Jana Mihalic, Cordula Gruettner, Fritz Westphal, Alison Geyh, Theodore I Deweese, and Robert Ivkov. **The effect of cell-cluster size on intracellular nanoparticle-mediated hyperthermia: is it possible to treat microscopic tumors.** Nanomedicine (Lond). 2013 January ; 8(1): 29–41.
59. Alicia A. Petyk, Andrew J. Giustini, Rachel E. Gottesman, B. Stuart Trembly, P. Jack Hoopes. **Comparison of magnetic nanoparticle and microwave hyperthermia cancer treatment methodology and treatment effect in a rodent breast cancer model.** Int J Hyperthermia, 2013 .December; 29(8): 819–827.
60. John A. Pearce, Alicia A. Petyk, Jack Hoopes. **FEM Numerical Model Analysis of Magnetic Nanoparticle Tumor Heating Experiments.** Conf Proc IEEE Eng Med Biol Soc. 2014 ; 2014: 5312–5315.
61. Zef Rijnen, Jurriaan F. Bakker, Richard A.M. Canters, Paolo Togni, Gerda M. Verduijn, Peter C. Levendag, Gerard C. Van Rhoon, and Margarethus M. Paulides. **Clinical integration of software tool VEDO for adaptive and quantitative application of phased array hyperthermia in the head and neck.** INTERNATIONAL JOURNAL OF HYPERTHERMIA 29(3):181-193.2013
62. René F. Verhaart, Zef Rijnen, Valerio Fortunati, Gerda M. Verduijn, Theo van Walsum, Jifke F. Veenland, Margarethus M. Paulides. **Temperature simulations in hyperthermia treatment planning of the head and neck region Rigorous optimization of tissue properties.** Journal of Radiation Oncology, Biology, Physics 190 (12); 1117-1124. 2014
63. Matthew R. Tarasek, Ruben Pellicer, Lorne W. Hofstetter, Wouter C. M. Numan, Jurriaan F. Bakker, Gyula Kotek, Paolo Togni, Rene F. Verhaart, Eric W. Fiveland, Gavin C. Houston, Gerard C. van Rhoon, Margarethus Marius Paulides & Desmond Teck Beng Yeo **Validation of MR thermometry: Method for temperature probe sensor registration accuracy in head and neck phantoms.** Int J Hyperthermia, 2014; 30(2): 142–149
64. J. Van Der Zee, M. De Bruijne, J.W.M. Mens, A. Ameziane, M.P. Broekmeyer-Reurink, T. Drizdal, M. Linthorst, & G.C. Van Rhoon. **Reirradiation combined with hyperthermia in breast cancer recurrences; Overview of experience in Erasmus MC.** Int. J. Hyperthermia, October 2010; 26(7): 638–648. 2010