Yoshihiro Deguchi - SHORT CV -

Name

Yoshihiro Deguchi

Birth date

October 17, 1962.

Position and Institution

Professor

Graduate school of Advanced Technology and Science, The University of Tokushima

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Education

BE: Energy engineering course, Toyohashi University of Technology, March 31, 1985.

ME: Energy engineering course, Toyohashi University of Technology, March 31, 1987.

DE: Total energy engineering course, Toyohashi University of Technology, March 31, 1990.

Work experience

April 1, 1990 – February 28, 2010 : Mitsubishi Heavy Industries, Ltd.

1990 –1995 Researcher

1996 –2003 Senior researcher

2004 –2010 Researcher manager

1996-1997 : Visiting researcher of the National Aerospace Laboratory of Japan

2004 : Collaborating researcher of the National Institute for Environmental Studies

March 1, 2010 -Present : Tokushima University, Professor

2012, 2014, 2015 : National Taiwan University of Science and Technology, Visiting Professor

2016- Present : Xi'an Jiaotong University, Visiting Professor

2017 : Sichuan University of Science and Engineering, Visiting Professor

Research area

Laser diagnostics (especially industrial applications)

Key words

Laser diagnostics, Combustion, Engine, Burner, Gas Turbine, Absorption Spectroscopy, Laser Induced Fluorescence, Laser Induced Breakdown Spectroscopy, Time of Flight Mass Spectrometry

Short biography

Yoshihiro Deguchi began his career in laser diagnostics with BE, ME, and DE degrees from Toyohashi University of Technology in 1985, 1987, and 1990. After receiving his DE, he worked as a research engineer in applied physics fields for Mitsubishi Heavy Industries, Ltd. for twenty years. He engaged in developing laser diagnostics such as laser-induced fluorescence, laser induced

breakdown spectroscopy, and laser Raman spectroscopy to apply these techniques to industrial fields. He moved to Tokushima University as a full professor in 2010. Dr. Deguchi has published research papers in the area of industrial applications of laser diagnostics. He is one of the leading engineers to put laser diagnostics into practical use, especially in large scale plants. He has published the book entitled "*Industrial Applications of Laser Diagnostics*" (CRS Press, Taylor & Francis, 2011). In addition to research interests, Dr. Deguchi teaches the encouragement and use of intellectual property. Qualified as both a patent attorney and a professional engineer, he works on educational projects that induce student spontaneity regarding their potential inventions at Tokushima University.

Publications

1. Book

1) **Y. Deguchi** and Z. Wang, *Plasma Science and Technology - Progress in Physical States and Chemical Reactions, Chapter 15 , Industrial Applications of Laser-Induced Breakdown Spectroscopy* , InTech, April 20, 2016
2) **Y.Deguchi**, *"Industrial applications of Laser Diagnostics"*, CRS Press, Taylor & Francis, 2011.

2. Journal Paper (2014-2017)

1) Z. Wang, **Y. Deguchi**, R. Liu, A. Ikutomo, Z. Zhang, D. Chong, J. Yan, J. Liu, Fang-Jung Shiou, Emission characteristics from laser-induced plasma using collinear long and short dual-pulse LIBS, Applied Spectroscopy, (accepted)
2) **Y. Deguchi**, R. Muranaka, T. Kamimoto, T. Takagi, S. Kikuchi, A. Kurihara, Reaction path and product analysis of sodium-water chemical reactions using laser diagnostics, Applied Thermal Engineering, Volume 114, 5 pp.1319–1324, 2017.
3) M. Jeon, **Y. Deguchi**, T. Kamimoto, D. Doh and G. Cho, PERFORMANCES OF NEW RECONSTRUCTION ALGORITHMS FOR CT-TDLAS(COMPUTER TOMOGRAPHY-TUNABLE DIODE LASER ABSORPTION SPECTROSCOPY), Applied Thermal Engineering, Volume 115, pp.1148–1160, 2017
4) K. Kurata, T. Yoshii, **Y. Deguchi**, H. Takamatsu, Raman microspectroscopic detection of thermal denaturation associated with irreversible electroporation, International Journal of Heat and Mass Transfer, Volume 111, pp.163-170, 2017.
5) Z. Wang, **Y. Deguchi**, S. Katsumori, A. Ikutomo, J. Yan, J. Liu, K. Tainaka, K. Tanno, H. Watanabe, and R. Kurose, Improved Measurement Characteristics of Elemental Compositions Using Laser-Induced Breakdown Spectroscopy, Spectroscopy, 31(1), pp. 22–35, 2016.
6) Takahiro Kamimoto, **Yoshihiro Deguchi**, Doo Won Choi, and Joon Hwan Shim: VALIDATION OF THE REAL-TIME 2D TEMPERATURE MEASUREMENT METHOD USING THE CT TUNABLE DIODE LASER ABSORPTION SPECTROSCOPY, Heat Transfer Research 47(2), pp.193–202, 2016.

7) Doo-Won Choi, Min-Gyu Jeon, Gyeong-Rae Cho, Takahiro Kamimoto, **Yoshihiro Deguchi** and Deog-Hee Doh, Performance Improvements in Temperature Reconstructions of 2-D Tunable Diode Laser Absorption Spectroscopy (TDLAS), Journal of Thermal Science Vol.25, No.1, pp. 84-89, 2016.

8) Z. Wang, **Y. Deguchi**, F. Shiou, J. Yan and J. Liu, Application of Laser-Induced Breakdown Spectroscopy to Real-Time Elemental Monitoring of Iron and Steel Making Processes, ISIJ International, Vol. 56, No. 5, pp. 723–735, 2016.

9) Z. Wang, **Y. Deguchi**, R. Liu, J. Yan, J. Liu, Characteristics of emission from laser-induced plasma of metallic compounds in gaseous condition: the effects of gas pressure and laser pulse energy, Spectroscopy Letters; an International Journal for Rapid Communication, Volume 49, Issue 6, pp. 396-403, 11 April, 2016.

10) Z. Wang, **Y. Deguchi**, Z. Zhang, Z. Wang, X. Zeng and J. Yan, Laser-induced breakdown spectroscopy in Asia, Frontiers of Physics, 11(6), pp.114213(1-25),2016.

11) T. Kamimoto, **Y. Deguchi** and Y. Kiyota, High temperature field application of two dimensional temperature measurement technology using CT tunable laser absorption spectroscopy, Flow Measurement and Instrumentation, Volume 46, Part A, pp. 51–57, 2015.

12) Z. Wang, J. Yan, J. Liu, **Y. Deguchi**, S. Katsumori, A. Ikutomo : Sensitive Cesium Measurement in Liquid Sample Using Low Pressure Laser-Induced Breakdown Spectroscopy, Spectrochimica Acta. Part B: Atomic Spectroscopy, Volume 114, pp. 74–80, 2015.

13) Takahiro Kamimoto, **Yoshihiro Deguchi**, Ning Zhang, Ryosuke Nakao, Taku Takagi and Jia-Zhong Zhang : Real-time 2D Concentration Measurement of CH4 in Oscillating Flames Using CT Tunable Diode Laser Absorption Spectroscopy, Journal of Applied Nonlinear Dynamics, Vol.4, No.3, pp.295-303, 2015.

14) Z.Z. Wang, **Yoshihiro Deguchi**, J.J. Yan and J.P. Liu : Breakdown pattern of hydrocarbons by laser breakdown time-of-flight mass spectrometry, Spectroscopy Letters; an International Journal for Rapid Communication, Vol.48, No.9, pp.669-676, 2015.

15) **Y. Deguchi,** T. Kamimoto and Y. Kiyota, Time resolved 2D concentration and temperature measurement using CT tunable laser absorption spectroscopy, Flow Measurement and Instrumentation, Volume 46, Part B, Pages 312–318, 2015.

16) Takahiro Kamimoto and **Yoshihiro Deguchi**, 2D Temperature Detection Characteristics of Engine Exhaust Gases Using CT Tunable Diode Laser Absorption Spectroscopy, Int J Mech Syst Eng, 1:109, 2015.

17) Z.Z. Wang, **Yoshihiro Deguchi**, Hiroaki Watanabe, Ryoichi Kurose, Junjie Yan and Jiping Liu : Improvement on quantitative measurement of fly ash contents using laser-induced breakdown spectroscopy, Journal of Flow Control, Measurement & Visualization, Vol.3, No.1, pp.10-21, 2015.

18) Z.Z. Wang, **Y.Deguchi,** J.J. Yan and J.P. Liu, "Comparison of the Detection Characteristics of Trace Species Using Laser-Induced Breakdown Spectroscopy and Laser Breakdown

Time-of-Flight Mass Spectrometry", *Sensors*, Vol.*15*, pp.5982-6008, 2015.

19) **Y. Deguchi**, T. Takata, A. Yamaguchi, S. Kikuchi and H. Ohshima, "Experimental and Numerical Reaction Analysis on Sodium-Water Chemical Reaction Field", Mechanical Engineering Journal, Vol. 2, No. 1, pp.14-29, 2015.

20) X.B.Zhang, **Y.Deguchi**, Z.Z.Wang, J.J.Yan, and J.P.Liu, "Sensitive detection of iodine by low pressure and short pulse laser-induced breakdown spectroscopy(LIBS)." J. Anal. At. Spectrom. vol. 29, pp.1082–1089, 2014.

21) A. Setiawan, T.Suekane, **Y.Deguchi**, K.Kusano, "Three-dimensional imaging of pore-scale water flooding phenomena in water-wet and oil-wet porous media", Journal of Flow Control, Measurement & Visualization, Vol. 2, pp.25-31, 2014.

22) Z.Z. Wang, **Y.Deguchi**, J.J. Yan and J.P. Liu, , "Rapid detection of mercury and iodine using laser breakdown time-of-flight mass spectrometry", Spectroscopy Letters , Vol. 48, Issue 2, pp. 128-138 , 2014.

23) **Y. Deguchi**, T. Kamimoto, Z.Z. Wang, J.J. Yan, J.P. Liu, Hiroaki Watanabe and Ryoichi Kurose, "Applications of laser diagnostics to thermal power plants and engines", Applied Thermal Engineering, Vol.73, Issue 2, pp. 1453–1464, 2014.

24) A.Setiawan, T.Suekane, **Y.Deguchi**, K.Kusano, "Pore-scale investigation of the effect of connate water on water flooding behaviour", Journal of Fluid Science and Technology, Vol. 9 , No. 2, p. JFST0012, 2014

25) Y. Mimami, **Y. Deguchi**, T. Suekane, "Effect of heterogeneity of porous media on gas permeation and entrapment", Journal of Flow Control, Measurement & Visualization, Vol. 2, pp. 110-119 , 2014.