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Associate Professor
Electrical and Information Engineering,
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Professional Expertise

His professional expertise encompasses plasma physics and application. He and his research group has been investigating on the plasma application and fusion device. Atmospheric-pressure plasma formation and low-pressure plasma physics are major topics in his laboratory. Measurement method of physical characteristic is developed for new finding phenomena.

Research Fields of Interest

- Atmospheric-Pressure Plasma
 1. Plasma current, density, and temperature measurements
 2. Plasma plume formation control
 3. Industrial and agriculture applications
- Fusion Plasma
 1. Magnetic and electrostatic fluctuations
 2. Physics of high temperature gas
 3. Plasma physics of magnetic confinement
- Low Pressure Plasma
 1. Flowing plasma
 2. Transition phenomena
 3. Plasma confinement by potential wall



Photograph of plasma ring formation around the steel ball.

Education

2005: Ph.D in Engineering, Graduate School of Engineering, Nagoya University, Japan

Professional Societies and Activities

Present – November 2014, Associate Professor, Niigata University

October 2014 – April 2010, Assistance Professor, Niigata University

Present – April 2007, Collaboration Research Fellow, National Institute of Advanced Industrial Science and Technology (AIST)

March – April 2007, Postdoctoral Research Fellow, Osaka University

March – April 2005, Postdoctoral Research Fellow, National Institute of Advanced Industrial Science and Technology (AIST)

Major Papers

- [1] "Investigation of helium plasma temperature in atmospheric-pressure plasma using line pair method," *Physics of Plasmas*, vol.23, no.2, pp.0235091-0235095, 2016
- [2] "Dependence of Plasma Plume Formation on Applied Voltage Waveform in Atmospheric-Pressure Plasma," *IEEE Transactions on Plasma Science*, vol.44, no.1, pp.107-112, 2016
- [3] "Beam Interactions with Surface Waves and Higher Order Modes in Oversized G-band Slow-Wave Structure," *IEEE Transactions on Plasma Science*, vol.44, pp.201-210, 2016
- [4] "Experimental study of intense radiation in terahertz region based on cylindrical surface wave resonator," *Journal of Applied Physics*, vol.118, no.12, pp.1231011-12310110, 2015
- [5] "Measurement Method of Plasma Current and Density in Atmospheric Pressure Plasma Jet," *IEEJ Transactions on Electrical and Electronic Engineering*, vol.10, no.6, pp. 614-618, 2015
- [6] "Influence of flowing helium gas on plasma plume formation in atmospheric pressure plasma," *Physics of Plasmas*, vol.22, no.5, pp.0535131-0535136, 2015
- [7] "Oscillation-Starting Conditions for Oversized G-Band (140-220 GHz) Backward Wave Oscillator Driven by Weakly Relativistic Electron Beam," *IEEE Transactions on Plasma Science*, vol.43, no.10, pp.3530-3536, 2015
- [8] "Improved confinement region without large magnetohydrodynamic activity in TPE-RX reversed-field pinch plasma," *Physics of Plasmas*, vol.21, no.11, pp. 1145021-1145024, 2014
- [9] "Beam interactions with surface waves and higher order modes in oversized backward wave oscillators," *Journal of the Korean Physical Society*, vol.65, no.8, pp.1209-1214, 2014
- [10] "Experimental study on Smith-Purcell radiations of weakly relativistic oversized backward wave oscillators," *Journal of the Korean Physical Society*, vol.65, no.8, pp.1196-1200, 2014
- [11] "Relation between Plasma Plume Charge and Length in Atmospheric Pressure Plasma," *IEEJ Transactions on Electrical and Electronic Engineering*, vol.9, no.S1, pp.S13-S16, 2014
- [12] "Relation between plasma plume density and gas flow velocity in atmospheric pressure plasma," *Physics of Plasmas*, vol.21, no.4, pp.0435111-0435115, 2014
- [13] "Experimental Study on G-band Oversized Backward Wave Oscillator Driven by Weakly Relativistic Electron Beam," *Plasma and Fusion Research*, vol. 9 pp.34060321-34060324, 2014
- [14] "Influence of Gas Flow on Plasma Length in Atmospheric Pressure Plasma Jet," *JPS Conference Proceedings*, vol.1 pp.0150841-0150845, 2014
- [15] "Surface Waves in Oversized G-Band Slow-Wave Structures with Rectangular Corrugations," *Plasma and Fusion Research*, vol.9 pp.34060221-34060224, 2014
- [16] "Higher Order Mode Radiations of Weakly Relativistic Oversized Backward Wave Oscillator," *Plasma and Fusion Research*, vol.8 pp.24010851-24010855, 2013
- [17] "Experimental Study on Generation of Electron Beam Utilizing Cold Cathode in the Weakly Relativistic Energy Region," *IEEE Transactions on Plasma Science*, vol.41, no.10, pp.2781-2785, 2013
- [18] "Smith-Purcell Radiation Based on Cylindrical Surface Waves," *Fusion Science and Technology*, vol.63, no.1T, pp.259-261, 2013
- [19] "Cylindrical Surface Waves and Slow-Wave Instabilities of Periodically Corrugated Cylinder," *Fusion Science and Technology*, vol. 63, no.1T, pp.152-155, 2013
- [20] "Influence of Bias Magnetic Field Configuration on Equilibrium of Field-Reversed Configuration Plasma Sustained by Rotating Magnetic Field," *Fusion Science and Technology*, vol.63, no.1T, pp. 147-151, 2013
- [21] "Normal Modes and Slow-Wave Instabilities in Oversized Coaxial Slow-Wave Structure with Rectangular Corrugations," *IEEE Transactions on Plasma Science*, vol. 41, no.10, pp.2729-2734, 2013
- [22] "Cylindrical Surface Wave on Periodically Corrugated Metal," *Plasma and Fusion Research*, vol.7 pp.24060221-24060224, 2012
- [23] "Experimental Study on Weakly Relativistic Oversized Backward Wave Oscillator with Coaxial Rectangular Corrugations," *Journal of the Korean Physical Society*, vol.59, no.6I, pp.3573-3577, 2011
- [24] "Numerical Study of Slow-wave Instabilities in an Oversized Coaxial Slow-wave Structure," *Journal of the Korean Physical Society*, vol.59, no.6I, pp.3555-3559, 2011
- [25] "Investigation of turbulence in reversed field pinch plasma by using microwave imaging reflectometry," *Physics of Plasmas*, vol.18, no.10, pp.1023151-1023154, 2011
- [26] "Experimental Study on Backward Wave Oscillation Based on Cylindrical Surface Wave of Smith-Purcell Free Electron Laser," *Plasma and Fusion Research*, vol.6, pp.24010391-24010394, 2011
- [27] "Correlation of electrostatic fluctuation and reversal of toroidal field in the reversed-field pinch plasma," *Physics of Plasmas*, vol.18, no.6, pp. 0645051-0645054, 2011
- [28] "Investigation of turbulence by microwave imaging reflectometry in the TPE-RX reversed field pinch," *Journal of Plasma and Fusion Research SERIES*, vol.9 pp.54-58, 2010
- [29] "Maximum Entropy Analysis of the 2D Density Turbulence Measured by MIR in TPE-RX," *Plasma and Fusion Research*, vol.5 pp.S10191-S10194, 2010
- [30] "Experimental Study on Focusing Multiple Atmospheric-Pressure Plasma Jets," *Journal of Plasma and Fusion Research SERIES*, vol.8 pp.1322-1325, 2009
- [31] "Equilibrium of Field-Reversed Configuration Plasma Sustained by Rotating Magnetic Field," *Journal of Plasma and Fusion Research SERIES*, vol.8 pp.971-974, 2009
- [32] "Azimuthally non-uniform equilibrium of field-reversed configuration sustained by rotating magnetic field with spatial high-harmonic components," *Nuclear Fusion*, vol.49, pp.0550101-0550105, 2009
- [33] "High Beta and High Density Operation in TPE-RX," *Plasma and Fusion Research*, vol.4, no.022, pp.1-6, 2009