



## **Yosuke TSUKIYAMA, Ph.D.**

Assistant Professor

Program: Advanced Materials Science and Technology

Area: Advanced Mechanical Science and Engineering

Undergraduate: Dept. of Engineering

<http://tribo.eng.niigata-u.ac.jp>

### **Professional Expertise**

Assistant Professor (2011 – Present)

Graduate School of Science and Engineering, Niigata University, Japan

- Developing a micro-patterned surface for low friction for metal bearings
- Developing a large real contact area material by using carbon nanotube forests
- Developing a micro-patterned surface for high friction against soft material

Postdoctoral Researcher (2010 –2011)

Department of Micro/Nano System Engineering, Graduate School of Engineering, Nagoya University, Japan

- Investigated friction materials using carbon nanotube forests for high friction coefficient
- Investigated micro-patterned surfaces with grooves to sweep away the debris for metal bearings
- Developed a method for evaluation of the adhesion force between fish grills and fish meat
- Co-worked to investigate the effect of the laser intensity distribution on laser ablation against POM

### **Research Fields of Interest**

My research interests pertain to the field of tribology. Tribology contributed strongly as a maintenance technology for machines elements. Controlling friction coefficient is one of the challenges in this field. Micro/Nanotribology is one the main interests of mine. I have investigated the tribological properties of carbon nanotube forests for high friction material. Application of controlled high or low friction is not only for mechanical elements but also for any interacting surfaces. I am also developing a micro-patterned surface showing low friction coefficient for bearings by laser machining. The key challenge was to sweep away the unwanted abrasive debris in lubricating oil. In addition, I am now co-working on observation of real contact area with Prof. Nitta as the basic research of the controlling friction.

### **Education**

2010: Ph.D. in Engineering, Graduate School of Engineering, Nagoya University, Japan

2007: M.S. in Engineering, Graduate School of Engineering, Nagoya University, Japan

2005: B.S. in Engineering, Department of Mechanical and Aerospace Engineering,  
Nagoya University, Japan

### **Professional Societies and Activities**

1. The Japan Society of Mechanical Engineers
2. Japanese Society of Tribologist
3. Japan Society of Design Engineering

## Awards

1. Good Presentation Award from Japanese Society of Tribologists, 2010
2. Fellow Award from the Japan Society of Mechanical Engineers, 2007

## Major Publications

### Papers

[1] Yosuke Tsukiyama, Noritsugu Umehara, and Michiko Kusunoki, "Strength at the interface of CNT films made by surface decomposition of SiC", Tribology Online, pp.352-355, Vol.3 No.7, (2008).

[2] K. Hirota, Y. Tsukiyama, and T. Yasuumi, "Precision blanking of thin sheet metals with the help of chemical etching", Journal of Materials Processing Technology, Vol 201, pp.209-213, (2008).

[3] Yosuke Tsukiyama, Noritsugu Umehara, and Michiko Kusunoki, "Nanowear characteristics of carbon nanotube film made by surface decomposition of SiC", Journal of Advanced Mechanical Design, Systems, and Manufacturing, Vol.4 No.1, pp.373-382, (2010).

[4] Norihiro Kimura, Yosuke Tsukiyama, Takayuki Tokoroyama, Noritsugu Umehara, "Evaluation of Mechanical Properties of the Superficial Layer of CNx with Ultra Low Friction in N<sub>2</sub> Gas", Transactions of the Japan Society of Mechanical Engineers. C, vol. 76, pp.3794-3799, (2010) [in Japanese].

[5] John E. Sinko, Katsuhiro Ichihashi, Yosuke Tsukiyama, Naoya Ogita, Takeharu Sakai, Noritsugu Umehara, and Akihiro Sasoh, "CO<sub>2</sub> laser ablation propulsion area scaling with polyoxymethylene propellant", AIP Conference Proceedings, Vol.1230, pp.207-218, (2010).

[6] John E. Sinko, Claude R. Phipps, Yosuke Tsukiyama, Naoya Ogita, Akihiro Sasoh, Noritsugu Umehara, and Don A. Gregory "Critical Fluences And Modeling Of CO<sub>2</sub> Laser Ablation Of Polyoxymethylene From Vaporization To The Plasma Regime", AIP Conference Proceedings, Vol. 1230, pp. 395-47, (2010)

[7] John E. Sinko, Stefan Scharring, Yosuke Tsukiyama, Katsuhiro Ichihashi, Naoya Ogita, Akihiro Sasoh, Noritsugu Umehara, Hans-Albert Eckel, and Hans-Peter Röser, "CO<sub>2</sub> Laser Ablation Area Scaling And Redeposition On Flat Polyoxymethylene Targets", AIP Conference Proceedings, Vol. 1278, pp.538-547, (2010)