



Tomohiro SASAKI, Ph.D.

Associate Professor

Program: Advanced Materials Science and Technology

Area: Advanced Mechanical Science and Engineering

Undergraduate: Dept. of Mechanical & Production Eng.

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

Professional Expertise

His professional expertise encompasses in deformation analysis of materials by optical techniques, and welding and joining of materials. His current research interests include residual stress analysis of welded joint with Electronic Speckle Pattern Interferometry, and relative motion analysis of ultrasonic welding process, dissimilar brazing using low temperature filler metal surface treatment of metals using ultrasonic cavitation peening.

Research Fields of Interest

1. Deformation measurements using Optical Techniques

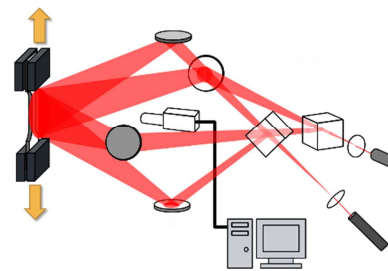
- Visualization of serration phenomenon of aluminum alloy
- Fatigue diagnosis of sheet metals
- Residual stress analysis of welded joint

2. Welding and Joining

- Relative motion analysis of ultrasonic welding using digital correlation
- Dissimilar brazing of cemented carbide and steel at low temperature
- Ultrasonic brazing

3. Surface treatment of metals

- Fatigue improvement of metals using ultrasonic cavitation
- Aluminization of titanium alloy using diffusion



Electronic speckle pattern interferometry (ESPI) for deformation analysis



Interferometric fringe pattern during serration of aluminum alloy

Education

2006: Ph.D. in Engineering, Graduate School of Yokohama National University, Division of Engineering, Japan

2003: M.S. in Engineering, Graduate School of Yokohama National University, Division of Engineering, Japan

2001: B.S. in Engineering, Dept. of Engineering, Yokohama National University, Japan

Professional Societies and Activities

1. Society for Experimental Mechanics
2. Japan Welding Society

3. Technical Commission on Interfacial Joining of Japan Welding Society
4. The Japan Institute of Light Metals
5. The Iron and Steel Institute of Japan
6. The Japan Society of Mechanical Engineers

Awards

1. JWS Interfacial Joining Research Award, 2012.05.18, JAPAN, Awards of National Conference

Major Publications

Papers

- [1] "Effect of Relative Motion between Weld Tool and Work Piece on Microstructure of Ultrasonically Welded Joint", *Materials Science Forum*, vol.783-786, pp.1782-1787, 2014
- [2] "Effects of Ni and Co Additions to Filler Metals on Ag-Brazed Joints of Cemented Carbide and Martensitic Stainless Steel", *Advanced Materials Research*, vol.922, pp.322-327, 2014
- [3] "Ultrasonic Spot Welding of Galvanized Steel Sheet", *Advanced Materials Research*, vol.922, pp.332-337, 2014
- [4] "Effects of Ni and Co elements in filler metals in Ag brazing of cemented carbide", *Materials Research Innovations*, vol.17, no.2, pp.142-147, 2013
- [5] "Analysis for relative motion in ultrasonic welding of aluminum sheet", *Sci. & Technol. Weld. & Join*, vol.18, no.1, pp.19-24, 2013.
- [6] "Evaluation of dynamic deformation behaviour of aluminum alloy by electronic speckle pattern interferometry", *Conference Proceedings of the Society for Experimental Mechanics*, vol.18, pp.133-139, 2013.
- [7] "Effect of loading history of aluminum on fringe pattern in electronic speckle pattern interferometry", *Conference Proceedings of the Society for Experimental Mechanics*, vol.18, pp.141-147, 2013.
- [8] "Revealing Load Hysteresis based on Electronic Speckle Pattern Interferometry and Physical Mesomechanics", *Physical Mesomechanics*, vol.15, no.1-2, pp.24-34, 2012.
- [9] "Analysis for ultrasonic welding process of aluminum sheets using digital image correlation method", *Quart. J. Jpn. Weld. Soc.*, vol.30, no.2, pp.19-26, 2012.
- [10] "Brazing of cemented carbide using Ag-based filler metals with a low melting point", *Quart. J. Jpn. Weld. Soc.*, vol.29, no.3, pp.204-209, 2011.
- [11] "Brazing of cemented carbides at lower temperatures", *Advanced Materials Research*, vol.109, pp.865-870, 2012.
- [11] "Effect of Diffusion Condition for Aluminizing on TiAl Based Alloy", *Materials Science Forum*, vol.706-709, pp.2571-2576, 2012.
- [12] "Oxidation Resistance of Al-rich Aluminide Coating on TiAl Based Alloy by Thermal Spray and Diffusion Treatment", *Advanced Materials Research*, vol.109, pp.820-825, 2012.
- [13] "Development of Ag based filler metal with low melting temperature", *Sci. & Technol. Weld. & Join*, vol.16, no.6, pp.502-508, 2011.
- [14] "Aluminizing of TiAl-based alloy using thermal spray coating", *Surface. & Coat. Technol.*, vol.205, no.13-14, pp.3900-3904, 2011
- [15] "Aluminizing of TiAl-Based Alloy Using Thermal Spray Coating", *Materials Science Forum*, vol.654-656, pp.1884-1887, 2011
- [16] "Solid state welding of CPTi and Aluminum alloy using a rotating probe", *Materials Science Forum*, vol.28, no.4, pp.402-407, 2010
- [17] "Improvement of mechanical properties of ferritic stainless steel weld metal by ultrasonic vibration", *J. Mater. Proc. Technol.*, vol.210, pp.1646-1651, 2010
- [18] "Ultrasonic brazing of Magnesium alloy", *Quart. J. Jpn. Weld. Soc.*, vol.28, no.1, pp.80-85, 2010
- [19] "Effect of Weld Tip Geometry on Ultrasonic Welding of Aluminum Alloy", *Advanced Materials Research*, vol.89-91, pp.419-424, 2010
- [20] "Ultrasonic Welding Mild Steel Sheet to Al-Mg Alloy Sheet", *Advanced Materials Research*, vol.89-91, pp.627-632, 2010
- [21] "Resistance spot welding of mild steel to magnesium alloy", *Quart. J. Jpn. Weld. Soc.*, vol.27, no.3, pp.202-207, 2010
- [22] "Resistance spot welding of mild steel to magnesium alloy", *Quart. J. Jpn. Weld. Soc.*, vol.27, no.3, pp.202-207, 2010
- [23] "Alloy Layer Structure Formed by High-Temperature Aluminizing in Metal Mold Steel SKD61", *Tetsu-to-hagane*, vol.95, no.6, pp.483-488, 2009
- [24] "Formation of FeAl Layer on Carbon-Nitrogen Free Fe-12Ni-9Co-10W Austenitic Alloy by Aluminizing Treatment and Its Effect on Oxidation Behavior in Steam", *J. Jpn. Inst. Metals*, vol.2009, no.4, pp.255-261, 2009
- [25] "Tool wear and surface roughness during machinability of high-temperature aluminized steel", *J. Mater. Proc. Technol.*, vol.197, pp.89-95, 2007