



Professor

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### Background

- 2020- Professor, Next Generation Tatara Co-Creation Centre, Shimane University
- 2016-2019 Associate Professor, Mechanical, Electrical and Electronic Eng., Shimane University
- 2013-2015 Brunel University London, UK
  - 2010-2011 Visiting Scholar, Center for Turbulence Research (CTR), Stanford University, USA
  - 2008-2010 Part-time lecturer, Aoyama Gakuin University
- 2003-2013 Japan Aerospace Exploration Agency (JAXA)
- 2001-2003 National Aerospace Laboratory of Japan (NAL)
- 2001 Dr. Eng. (Aerospace Engineering), University of Tokyo
- 1998 Master Eng. (Aerospace Engineering), University of Tokyo
- 1996 Bachelor Eng. (Aerospace Engineering), University of Tokyo

### Research

Areas: Numerical simulation, Multiphase flow, Heat/mass transfer, Metal processing

I have mostly worked in aerospace research areas using numerical simulation, especially focusing on fluid dynamics and thermal engineering for engines. Complicated multiscale/multiphysics phenomena have been investigated, using in-house numerical codes, such as liquid/gas flows with surface tension, solid/gas flows, phase change, heat/mass transfer, compressibility, non-ideal equation of state gas/liquid/solid, chemical reactions and turbulence. Metal processing requires exactly the same understanding as the above aspects on thermo-fluid dynamics and my research is currently focused on elucidating physical mechanisms in metal processing.

### Key papers

1. J. Shinjo, A. Umemura, "Fluid dynamic and autoignition characteristics of early fuel sprays using hybrid atomization LES," *Combustion and Flame* 203 (2019) 313-333.
2. J. Shinjo, J. Xia, L. C. Ganippa, A. Megaritis, "Puffing-enhanced fuel/air mixing of an evaporating single *n*-decane/ethanol emulsion droplet and a droplet group under convective heating," *Journal of Fluid Mechanics* 793 (2016) 444-476.
3. J. Shinjo, J. Xia, L. C. Ganippa, A. Megaritis, "Physics of puffing and microexplosion of emulsion fuel droplets," *Physics of Fluids* 26 (2014) 103302.
4. J. Shinjo, A. Umemura, "Simulation of liquid jet primary breakup: dynamics of ligament and droplet formation," *International Journal of Multiphase Flow* 36 (2010) 513-532.