

Tsubasa Sasaki | Curriculum Vitae

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EDUCATION

The University of Cambridge

Doctor of Philosophy (Civil Engineering)

Cambridge, the United Kingdom

July 2019

The University of Tokyo

Master of Engineering (Civil Engineering)

Tokyo, Japan

March 2014

The University of Tokyo

Bachelor of Engineering (Civil Engineering)

Tokyo, Japan

March 2012

National Institute of Technology, Ichinoseki College

Associate degree in Engineering (Mechanical Engineering)

Iwate, Japan

March 2009

EXPERIENCE

Lawrence Berkeley National Laboratory

Postdoctoral Scholar

Berkeley, the United States

August 2019 - Present

- Responsible for numerical simulations of the integrity of geological nuclear waste repositories as well as the integrity of wells for subsurface gas storage facilities in California, USA.
- Results helped a third-party thermo-hydrological (TH) code for simulating radionuclide transport to incorporate the mechanical (M) effect on permeability changes in rock.
- Results for the well integrity analysis will help to develop probability distributions of well failure due to fault slip by encompassing the probability distributions of rock, cement, and casing parameters.

University of California, Berkeley

Visiting Scholar

Berkeley, the United States

February 2017 - June 2019

- Led a collaborative project with the industry, namely Baker Hughes and Toyo Engineering, on the distributed fiber optic strain sensing of oil/gas wells.
- Results of the project led to the development of a new fibre optic cable for the field monitoring of the integrity of oil/gas wells in methane hydrate reservoirs.

Churchill College, University of Cambridge

Teaching Assistant

Cambridge, the United Kingdom

February 2015 - January 2017

- Taught Vector Calculus, Linear Algebra and Partial Differential Equations to undergraduate students in Engineering at Churchill College of the Cambridge University.
- Oversaw 45 students over the two-year period (100 hours in total) in small group supervisions. This effort contributed to 21 out of the total 65 supervised students obtaining the first/distinction grades in the final exam of the Cambridge University in 2015.

PROJECTS

Distributed fiber optic strain monitoring of oil/gas wells

February 2017 - October 2020

- Carried out laboratory experiments on the distributed fiber optic strain sensing of axial and flexural deformations of a well model.
- Results of this research led to the development of a new fiber optic strain cable for in-well strain monitoring in an upcoming field gas production test at the Nankai Trough, Japan.

Finite element analysis of methane hydrate well integrity

October 2014 - June 2019

- Conducted finite element analyses on wellbore integrity in the methane hydrate reservoirs at the Nankai Trough, Japan, by incorporating site measurement and laboratory test data for hydrate-bearing formations.
- Results revealed different scenarios of wellbore damage, against which the observational method by real-time fiber optic monitoring has been suggested.

BiogROUT soil stabilization of liquefiable sand

April 2012 – March 2014

- Led a research project on a novel bio-mediated ground stabilization method against the long duration seismic motions of the 2011 Tohoku Earthquake.
- Results demonstrated the effectiveness of the biogROUT against liquefaction for sandy and silty soils with varying fines content, which are representative of the heavily liquefied subsurface soil layers in Urayasu City, Japan.

PUBLICATIONS

Tsubasa Sasaki and Jonny Rutqvist. Estimation of stress and stress-induced permeability change in a geological nuclear waste repository in a thermo-hydrologically coupled simulation. *Computers and Geotechnics*, 129(August 2020):103866, 2021.

Tsubasa Sasaki, Benshun Shao, Mohammed Elshafie, Marilena Papadopoulou, Koji Yamamoto, and Kenichi Soga. Simulation of axial tensile well deformation during reservoir compaction in offshore unconsolidated methane hydrate-bearing formation. *Computers and Geotechnics*, 129, 2021.

Tsubasa Sasaki, Jinho Park, Kenichi Soga, Taichi Momoki, Kyojiro Kawaguchi, Hisashi Muramatsu, Yutaka Imasato, Ajit Balagopal, Jerod Fontenot, and Travis Hall. Distributed fibre optic strain sensing of an axially deformed well model in the laboratory. *Journal of Natural Gas Science and Engineering*, 2019.

Tsubasa Sasaki, Kenichi Soga, and Muhannad Abuhaikal. Water absorption and shrinkage behaviour of early-age cement in wellbore annulus. *Journal of Petroleum Science and Engineering*, 169:205–219, 2018.

Tsubasa Sasaki, Kenichi Soga, and Mohammed Z.E.B. Elshafie. Simulation of wellbore construction in offshore unconsolidated methane hydrate-bearing formation. *Journal of Natural Gas Science and Engineering*, 60(October):312–326, 2018.

Tsubasa Sasaki and Reiko Kuwano. Undrained cyclic triaxial testing on sand with non-plastic fines content cemented with microbially induced CaCO₃. *Soils and Foundations*, 56(3):485–495, 2016.

Tsubasa Sasaki, Ikuo Towhata, and Suguru Yamada. Undrained cyclic resistance of liquefiable sand undergoing long duration of earthquake motion. In *Proceedings of the 5th International Geotechnical Symposium*, pages 301–309, Incheon, Republic of Korea, 2013.

SCHOLARSHIPS AND GRANTS

- **Japan Student Services Organization Overseas Scholarship**, 3.9 Million JPY per year, 2014-2017 (3 years)
- **Cambridge Trust Scholarship**, 10,000 GBP per year, 2014-2017 (3 years)
- **UC Berkeley Visiting Scholar Fellowship**, 10,000 USD per year, 2017-2019 (2 years)
- **Ford of Britain Trust**, 600 GBP, 2016

AWARDS AND ACHIEVEMENTS

- **Excellent Presentation Award**, 6th International Student Seminar on Civil Infrastructure, August 2013
- **Young Researcher Award**, 12th International Symposium on New Technologies for Urban Safety of Mega Cities in Asia, October 2013
- Programming Languages: Python, C++, Fortran
- Native in Japanese, fluent in English