Curriculum Vitae

Masahiko OSADA male **Date of Birth**: January 2nd, 1965

<Present Status>

Associate Professor, Saitama University

<Present Address>

Geosphere Research Institute, Saitama University,
255 Shimo-ohkubo, Sakura-ku, Saitama-city, Saitama, 338-8570, JAPAN

<Education>

1988 B.S. from Department of Geology, Faculty of Science, University of Tokyo
1999 Dr. of Engineering, Saitama University

<Professional Career in University>

1989 Research Associate, Department of Civil Engineering, Saitama University
2001 Associate Professor, Geosphere Research Institute, Saitama University

<Professional Career for ISRM and other Societies>

Secretary General, the 13th Japan Symposium on Rock Mechanics and the 6th Japan-Korea Joint Symposium on Rock Mechanics, JCRM, 2011-2013
Delegate, Japan Committee for Rock Mechanics (JCRM, Japan National Group for ISRM), 2011-2012
Member, Editorial Committee on International Journal of the JCRM, 2005-2008

Secretary, Committee of Standardizing for Geotechnical and Geo-environmental Investigation Methods, the Japanese Geotechnical Society (JGS) 2008-present
Member, Department of Standards, JGS, 2008-present
Member, Editorial Committee on Journal of JSEG, JSEG, 1991-1999

Chairperson, Research Planning Committee, JSEG, 2012-present
Member, Research Group for Ground Water, JSEG, 2012-present
Board Member, JSEG, 2008-present
Delegate, Japan Society of Engineering Geology (JSEG), 2002-2005

Chairperson, Organizing Committee of the Symposium on Rock Mechanics, Committee on Rock Mechanics, Japan Society of Civil Engineers (JSCE), 2010-2011
Member, Committee of Civil Engineering of Nuclear Power Facilities, JSCE, 2010-present
Member, Committee on Rock Mechanics, JSCE, 2009-present
Member, Editorial Committee on Journal of JSCE, Division C, 2009-2010

Member, Technical Committees on Local Government, Japan Atomic Energy Agency, Radioactive Waste Management Funding and Research Center, Geo-space Engineering Center in Engineering Advancement Association of Japan, etc.

<Recent Research Topics>

(1) Rock Deformation and Fluid/Vapor/Micro-bubble Flow

Dr. Osada has conducted a lot of laboratory triaxial compression tests on homogeneous and inhomogeneous rocks. Rock deformation is easily affected by the existence / behavior of pore water, especially in soft sedimentary rocks. Recently, he focuses on the understanding of drying and swelling behaviors in sedimentary rocks. It is well known that porous solids are deformed by drying and absorbing water, and rocks are no exception to the phenomena. For example, rocks may be shrunk due to ventilation and suffer additional damage by deformation due to the excavation of tunnels in cases where sedimentary rock is selected for nuclear waste repository sites. Dr. Osada thinks that we need to quantitatively know about the coupled behaviors of rock deformation, water content and its distribution in changing saturation. As an extension of the above-mentioned research, research on the micro-bubble flow in porous media and fractures is now set to be started.

(2) Natural Analogue Study on Rock Fractures

Rock fractures play a very important role mechanically and hydraulically when rock masses are used in engineering projects, such as dam construction, tunnel excavation, underground space development and nuclear waste disposal. Rock fractures and those fillings, on the other hand, have produced a lot of recorded information on the various kinds of histories on when and what happened during the filling and solidifying processes. The aim of this research is to retrieve them from natural fractures. Recently, Dr. Osada addresses the special fractures distributed in the coastal area of subtropical regions. These fractures are elucidated to be formed within several thousand years. This implies that these fractures may preserve some events occurring in the Quaternary Era, for example, climate change and huge tsunamis. Now he is studying these fractures using various approaches. In addition, this information may be so valuable as to think about the mineralization of carbon dioxide in relation to CCS projects.

(3) Hydrogeology in Fractured Rock Masses

Rock fractures act as highly permeable conduits. However, all fractures do not act in this manner. How do highly permeable fractures form? This is the point of Dr. Osada's research. He thinks that hints are in nature. For example, if fractures have experienced high flows in the past, this would result in the walls of fractures having been altered either physically or chemically and/or minerals having been deposited along the fractures. When such fractures are observed in outcrops, the geometrical features of relevant fractures should be described thoroughly by the naked-eye and by microstructural analyses. The accumulation of these kinds of data sets is required in order to evaluate the proper groundwater flows in fractured rock masses in the subsurface. He is looking for these outcrops at any time and all over the world. On the other hand, it should be noted that we observe only the results of the formation of these fractures. Therefore, he is trying to reproduce the transient process in laboratory experiments, including the development of new devices like the coupled shear-flow-visualization apparatus.

<Publications>

Watanabe, K. and Osada, M., Evaporation measurement in the Validation Drift - Part 2, Stripa Project 91-27, pp. 1-102, 1993.

Yoshinaka, R. and Osada, M., The comparison between dynamic and static strength of soft sedimentary rocks, Rock foundation, Balkema, pp. 109-114, 1995.

Yoshinaka, R., Osada, M. and Tran, T. V., Deformation behaviour of soft rocks during consolidated-undrained cyclic triaxial testing, Int. J. Rock Mech. Min. Sci. & Geomech. Abstr., Vol. 33, No. 6, pp. 557-572, 1996.

Yoshinaka, R., Tran, T. V. and Osada, M., Pore pressure changes and strength mobilization of soft rocks in consolidated-undrained cyclic loading triaxial tests, Int. J. Rock Mech. Min. Sci., Vol. 34, No. 5, pp. 715-726, 1997.

Yoshinaka, R., Tran, T. V. and Osada, M., Mechanical behavior of soft rocks under triaxial cyclic loading conditions, Int. J. Rock Mech. Min. Sci. & Geomech. Abstr., Vol. 34, No. 3/4, pp. 605-614, 1997.

Yoshinaka, R., Tran, T. V. and Osada, M., Non-linear, stress- and strain- dependent behavior of soft rocks under cyclic triaxial conditions, Int. J. Rock Mech. Min. Sci., Vol. 35, No. 7, pp. 941-955, 1998.

Saotome, A., Yoshinaka, R., Osada, M. and Sugiyama, H., Constituent material properties and clast-size distribution of volcanic breccia, Engineering Geology, Vol. 64, pp. 1-17, 2002.

Osada, M., Meier, E., Bossart, P., Morita, Y. and Watanabe, K., Experimental design for evaporation logging in Mont Terri Rock Laboratory, Proceedings of the Seminar on Civil and Environmental Engineering, Thamasat University, 2003.

Osada, M., Shrestha, S. K., Kajiyama, T. and Yamaguchi, K., Application of rock mass integration method (RMIM) with DDA modeling in rock slope stability, Proceedings of the ISRM International Symposium: Third Asian Rock Mechanics Symposium, Kyoto, Japan, pp. 1257-1262, 2004.

Meier, E., Bossart, P. and Osada, M., Evaporation logging FM-D Experiment: manual, calculations and modification of the equipment, Mont Terri Project Technical Note 2003-02, pp. 1-62, 2004.

Osada, M., Funato, A., Yoshinaka, R., Ito, H., Kitagawa, T., Sasaki K., Aoki, K., Aydan, O., Akutagawa, S., Kiya, H., Kuwahara, K., Seto, M., Tanaka, S., Tani, K., Mimuro, T. and Mori, T., Geotechnical description and JGS engineering classification system for rock mass, International Journal of the Japanese Committee for Rock Mechanics, Vol. 1, No. 1, pp. 7-17, 2005.

Osada, M. and Taniyama, H., Preliminary consideration for analyzing ground deformation due to fault movement, Proceedings of 7th International Conference on the Analysis of Discontinuous Deformation, pp. 113-120, 2005.

Dong, P. H. and Osada, M., Effects of dynamic friction on sliding behavior of block in DDA, Proceedings of Eighth International Conference on the Analysis of Discontinuous Deformation, pp. 129-134, 2007.

Mogi, H., Osada, M. and Hashida, T., Microtremor measurement for rock-fall hazard assessment, The 6th Asian Regional Conference on Geohazards in Engineering Geology, pp. 174-176, 2007.

Aung Ko Ko Soe and Osada, M., Deformation Behavior of Soft Sedimentary Rocks in Response to Drying Phase, The 6th Asian Regional Conference on Geohazards in Engineering Geology, pp. 107, 2007.

Park, H., Osada, M. and Sasaki, T., Shear-flow properties of pumice tuff including initial failure and direct observation of shear deformation, The 6th Asian Regional Conference on Geohazards in Engineering Geology, pp. 108, 2007.

Ahn, C., Osada, M. and Takahashi, M., Image analysis for evaluating the deformational behavior of rock, The 6th Asian Regional Conference on Geohazards in Engineering Geology, pp. 130, 2007.

Yoshinaka, R., Osada, M., Park, H., Sasaki, T. and Sasaki, K., Practical determination of mechanical design parameters of intact rock considering scale effect, Engineering Geology, Vol. 96, pp. 173-186, 2008.

Maung, M. M., Watanabe, K., Sasaki, T. and Osada, M., Combination of genetic algorithm and inverse solution technique for estimating the hydraulic properties of unsaturated soft rock, Jour. Japan Soc. Eng. Geol., Vol. 49, No. 2, pp. 64-77, 2008.

Aung Ko Ko Soe, Osada, M. and Thandar Thatoe Nwe Win, Evaluating the deformation behaviour of Shirahama sandstone in moisture transfer process, The 12th Japan symposium on Rock Mechanics, pp. 385-390, 2008.

Park, H., Osada, M., Sasaki, T., Takahashi, M. and Kumagai, S., Shear-flow- visualization coupling test and triaxial shear-flow coupling test for soft sedimentary rock, The 12th Japan Symposium on Rock Mechanics, pp. 391-396, 2008.

Aung Ko Ko Soe, Osada, M., Takahashi, M., and Sasaki, T., Characterization of drying-induced deformation behaviour of Opalinus clay and tuff in no-stress regime, Environmental Geology, Vol. 58, pp. 1215-1225, 2009.

Aung Ko Ko Soe, Osada, M. and Thandar Thatoe Nwe Win, Evaluating the deformation behaviour of Shirahama sandstone in moisture transfer process, International Journal of the Japanese Committee for Rock Mechanics, Vol. 5, No. 2, pp. 69-76, 2009.

Ahn, C., Takahashi, M. and Osada, M., Evaluation of pore structure of Berea Sandstone by image processing technique, Korea- Japan Joint Symposium on Rock Engineering, 2009.

Aung Ko Ko Soe, Osada, M. and Thandar Thatoe Nwe Win, Drying-induced deformation behaviour of Shirahama sandstone in no loading regime, Engineering Geology, Vol. 114, pp. 423-432, 2010.

Adikaram, N. M., Illankoon, T. N. and Osada, M., Anisotropic deformation behaviour of Tage tuff in 1D drying condition, 12th JSCE International Summer Symposium, CDROM, 2010.

Adikaram, N. M. and Osada, M., Anisotropic properties of Tage tuff based on ultrasonic wave velocity measurements, Geo-Kanto, CDROM, 2010.

Ahn, C., Takahashi, M., Osada, M., Park, H. and Fujii, Y., Fluid pathways in Berea sandstone by image processing technique, Joint Meeting of Korean and Japanese Geological Societies, CDROM, 2010.

Osada, M., Adikaram, N. M. and Illankoon, T. N., Drying-induced deformation and consequent change in mechanical properties of sedimentary rocks, Proceedings of International Congress on Rock Mechanics, Paper ID: ISRM11-0095, pp. 783-786, 2011.

Mathushita, T., Osada, M. and Takahashi, M., Characteristics and ages of rock fractures filled with carbonates in the vicinity of uplifted corals, Proceedings of 45th US Rock Mechanics / Geomechanics Symposium, American Rock Mechanics Association, ARMA11-338, 2011.

Adikaram, N. M., Osada, M. and Yamabe, T., Anisotropic behavior of Tage tuff in changing saturation, Research Report of Department of Civil and Environmental Engineering, Saitama University, Vol. 37, pp. 25-32, 2011.

Sudisman, R. A., Osada, M., Takemura, T. and Takahashi, M., Effect of microbubbles existence on permeability of Berea sandstone, The 13th International Summer Symposium, Uji, Japan, 2011.

Illankoon, T. N., Osada, M. and Adikaram, N. M., Effect of specimen height on deformation and elastic wave velocity of Tage tuff during drying, JSCE Annual Meeting, Nagoya, CS4-048, 2012.

Matsushita, T., Osada, M. and Takahashi, M., Age variations of layered fillings within a single fracture in sedimentary rock at coastal outcrops of Yakushima Island, Japan Proceedings of 7th Asian Rock Mechanics Symposium, pp. 1041-1047, 2012.

Illankoon, T. N., Osada, M. and Adikaram, N. M., Effect of desiccation on the strain and elastic wave velocities of Tage Tuff, Proceedings of 7th Asian Rock Mechanics Symposium, pp. 192-201, 2012.

Sudisman, R. A., Osada, M., Takemura, T. and Takahashi, M., Experimental Study on Fluid Flow Containing Microbubbles through Porous Sandstone and Sand Grains, Proceedings of 7th Asian Rock Mechanics Symposium, pp. 1000-1009, 2012.

Mathushita, T., Osada, M. and Takahashi, M., AMS ^{14}C ages and petrological features for solidified fractures with carbonates in granite at coastal outcrops of Yakushima Island, Japan Environmental Earth Sciences, Vol. 68, pp. 577-584, 2013.

Illankoon, T. N., Suu Mon Yee, Osada, M., Maekawa, K., Tada, H. and Kumasaka, H., Drying-induced deformation of Horonobe sedimentary rocks in the Koetoi and Wakkanai formations, Proceedings of the 13th Japan Symposium on Rock Mechanics, pp. 899-904, 2013.

Pardede, F. H. and Osada, M., Microscopic observation of water containing micro-bubbles flows through fractured mudstone specimens, Proceedings of the 13th Japan Symposium on Rock Mechanics, pp. 973-978, 2013.

Park, H., Ito, K., Takeno, N., Takahashi, M., Osada, M. and Grzegorz, S., Three-dimensional modeling of shear-flow coupled behavior in soft sedimentary rock, Japan, Proceedings of the 13th Japan Symposium on Rock Mechanics, pp. 993-996, 2013.

Park, H., Osada, M., Matsushita, T., Takahashi, M. and Ito, K., Development of coupled shear-flow-visualization apparatus and data analysis, International Journal of Rock Mechanics and Mining Sciences, Vol.63, pp.72-81, 2013.

In addition, more than a total of 100 peer-reviewed journal papers, symposium papers and annual conference abstracts have been written in Japanese by Dr. Osada.