

33rd KKHTCNN Symposium on Civil Engineering

NUS College of Design and Engineering, Singapore

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修士課程二年

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2022年11月17日から18日にかけて、シンガポール国立大学で開催された33rd KKHTCNNに参加した。本会議は京都大学 (Kyoto University), 韓国科学技術院 (Korea Institute of Science and Technology), 香港科技大学 (Hong Kong University of Science and Technology), 同済大学 (Tongji University), チュラロンコン大学 (Chulalongkorn University), シンガポール国立大学 (National University of Singapore), 国立台湾大学 (National Taiwan University) の計7大学により開催される国際シンポジウムである。本研究室では地盤系セッションにおいて、表1に示すタイトルで研究発表を行った。以下では発表時に頂いた質問と回答の内容を記載する。

表1 発表論文タイトル

浅井 泰一郎	[Geotechnical Session G-1 (E4-04-04)] Methods for Measuring Water Absorption Capacity of Finely Shredded Paper
上平 健登	[Geotechnical Session G-2 (E4-04-04)] Change in Coordination Number of Pore Water in Unsaturated Sand under Triaxial Compression
大谷 悠哉	[Geotechnical Session G-3 (E4-04-04)] Visualization of Fabric Tensor of Very Loose Saturated Sand under Undrained Triaxial Compression
廣瀬 駿	[Geotechnical Session G-1 (E4-04-04)] Effect of the number of cyclic shearing and surface roughness of structures on cyclic shear characteristics at the contact surface with sand

浅井 泰一郎 (M2)

* 質問された内容

(a) From Prof. Tirawat Boonyatee, Chulalongkorn University

Q: In the water absorption test, the specimen is dried for 20 minutes to remove water adhering to the surface, but does this take into account the effect of evaporation of water inside the specimen?

A: It is thought that the shorter the drying time in air, the less evaporation of the sample would be, so the drying time should be as short as possible. However, water was still dripping from the edges of the bag after 10 minutes of drying, so I decided on a drying time of 20 minutes, when the water droplets had stopped falling.

* 質問した内容

・ Geotechnical Session G-2 Nov 17, Thu 16:15 - 17:45

To Benyapa Punnoi, Chulalongkorn University

[Use of Microbially Induced Calcite Precipitation for Improving Strength and Stiffness of Clay]

Q: How did you make the specimens in your experiments?

A: First, I mixed the dry materials and then mix them with water to make uniform specimen. And then I made the specimens of unconfined compressive test by compacting them using rammer in 4 layers into a mold, which inner diameter is 50 mm and height is 100 mm.

感想

台湾, 香港, 中国, 韓国, タイ, シンガポールの大学が参加する学会で発表する機会を得た. 英語での発表は新鮮であり, 日本にはない研究の着想に大変驚いた. 地盤改良の分野では改良効果のメカニズムについて明らかにすることは難しい. 本学会ではこの点について学ぶことができ勉強になった. 今回学んだことを私たちの研究に繋げて邁進していきたい.

上平 健登 (M2)

* 質問された内容

(a) From Prof. Yasuo Sawamura, Kyoto University

Q: The trend of changes in the percentage of liquid bridges and bulk water under drained and undrained conditions is reversed, what is the mechanism?

A: Under drained condition, the number of liquid bridges with small volume increased as the number of bulk water decreased because the pore water with larger volume drained out more easily.

Under undrained conditions, the total volume of pore water does not change, but the degree of saturation increases, which causes the liquid bridges to combine with each other and fill the pore space as bulk water.

(b) From Pongsapak Kanjanatanalert, Chulalongkorn University

Q: The results are shown up to a coordination number of 6, so let's explain the difference of each coordination number.

A: This study focuses on the classification of liquid bridges and bulk water, so I distinguish between those with coordination number 2 and those with a coordination number 3 or greater.

Therefore, I do not consider any particular difference between those with coordination number 3 or higher.

* 質問した内容

・ Geotechnical Session G-2 Nov 17, Thu 16:15 - 17:45

To Amali Gitanjali Rayappan Kennedy, National Taiwan University

[Experimental Study of Liquefaction Resistance Inn EICP Technique]

Q: Calcium ions are separated from calcium chloride and combined with carbonate ions to obtain carbonate ions, but how are chloride ions treated?

A: Ammonium ions are also generated in the process of carbonate ion formation and are treated by reacting chloride and ammonium ions.

感想

本学会への参加は, 初めての国際学会への参加であり, また私自身初めての海外渡航でもあった. 英語で発表し,

質問内容を聞きとり、質問に対して答えていく。その全てが私にとってとても困難に感じ、普段日本語で通じることのありがたさを実感することができ、同時にいかに英語力が足りていないかを思い知る機会となった。今回の経験を反省して今後あるかもしれない英語発表の機会に向けて精進していこうと思う。

大谷 悠哉 (M2)

* 質問された内容

(a) From Prof. Tirawat Boonyatee, Chulalongkorn University

Q: I wondered why the triaxial compression test results of loose sand in the previous study showed a sharp drop in deviator stress. What phenomenon is occurring?

A: Although the detailed mechanism of this phenomenon has not yet been elucidated, it is believed that liquefaction-like phenomenon occur even under quasi-static loading conditions in loose saturated sand.

(b) From Prof. Yasuo Sawamura, Kyoto University

Q: In the analysis results of the particles contact direction of dense sand, the graph is inclined, please explain the reason.

A: In dense sand, it has been confirmed that the contact in the direction perpendicular to the shear zone is predominant with the formation of the shear zone. This result is satisfied in this study, and we believe that this structure resists external forces.

* 質問した内容

・ Geotechnical Session G-2 Nov 17, Thu 16:15 – 17:45

To Trung Nghia Phan, Chulalongkorn University

[Stability Analysis of Vegetated Slope Using Measured Root Reinforcement Data of Two Contrasting Vetiver Species]

Q: As compared in the case studies in the presentation, root depth is important for the slope reinforcement effect of vegetation. However, the direct shear strength is the same regardless of the root depth, or the strength is higher in the shallow-rooted case. I would like to know if there is any possible reason for this.

A: The results presented here focus on the difference in reinforcement effect due to vertical stress and do not fully take into account the effect of rooting depth. We plan to study this issue in the future.

感想

今回が初の国際学会への参加であり、戸惑いや不安が大きかったが、言語の壁を越えて海外の先生方や学生と発表や質疑に取り組むことができ、非常に楽しく有意義な学会参加であったと感じた。アジア各国で、土地特有の地盤の改良に関するものや耐震技術、地盤改良に関するものなど、幅広い研究が行われていることを学び、多様な研究に熱意を持って取り組む姿に、私もより一層真摯に研究に励みたいと感じた。

廣瀬 駿 (M2)

* 質問された内容

(a) From Prof. Tirawat Boonyatee, Chulalongkorn University

Q: What is the sand particle size? And is the surface roughness of the sand measured?

A: D_{50} of Toyoura sand used as the ground material is 0.2 mm.

The surface roughness of the geomaterial was not measured. The reason for this is that the method used to measure the surface roughness of the structure this time is to physically measure the unevenness using a needle, which is not possible on a sand surface. There is a method to obtain surface roughness by optically photographing the surface, and we would like to use this method in the future. Furthermore, it is possible that the surface roughness of the ground material at the boundary may change during shear.

* 質問した内容

・ Geotechnical Session G-3 (E4-04-04)

To Siga A, Kyoto University

[Experimental Study on Tunnel Face during Tunnel Excavation Process in Bench Cut Method through Centrifugal Model Tests]

Q: On page 12, the two cases with water content =3% have very different results, do you have any thoughts on the reason for this?

A: The reason for this is not well understood. The first time the experiment was done under all conditions, it showed different results under those conditions, so we did it a second time.

* 感想

今回の学会参加は、自身にとって英語での発表、質疑応答に初めて挑戦する機会であり、かつ、日本以外の大学の研究発表に触れることができる数少ない機会でもあり、とても貴重で新鮮であった。多くの学生が流暢な英語で双方向の議論を交わす中、翻訳サイトを片手になんとか中身を理解する…という自身の能力の至らなさを痛感した。本学会を通じて得た興味関心、反省を胸に、今後も研究活動に邁進したい。