

Report of the Sixth UK-Japan Engineering Education League Workshop
Yoshio Hisaeda, Kyushu University, and
Nobuyuki Iwatsuki, Tokyo Institute of Technology

1. Outline

Dates: Monday, 3 September – Wednesday, 5 September 2018

Main Venue: Nishijin Plaza, Kyushu University

Attendees: Seventy-nine faculty members and students (including 29 PhD students)

Japanese Universities: Hokkaido University, Tohoku University, University of Tokyo, Tokyo Institute of Technology, Nagoya University, Osaka University, Kyushu University

UK Universities: Imperial College London, Queen Mary University of London, University of Glasgow, Queen's University Belfast

2. Opening Ceremony

Professor Yoshio Hisaeda, Dean of Engineering, Kyushu University, declared the opening of the 6th UKJEEL Workshop, and Professor Roderick Smith, Imperial College London gave a welcome speech. Then there were two keynote lectures; "Challenge for unlimited molecular design aiming for high performance organic optoelectronic devices" by Professor Chihaya Adachi, and "Nanomaterials and nanobubbles for heat transfer" by Professor Koji Takahashi, both from Kyushu University.



Figure 1 Participants of UKJEEL Workshop at Kyushu University

3. Students' Activities

Students made 1-minute presentations and then poster presentations of their research on 3 September. Then they formed 6 groups to have discussion on "Material requirements to meet future needs of society: Required breakthroughs in technology and processing". Discussion results were presented on 4 September. The best group was awarded during the Banquet.

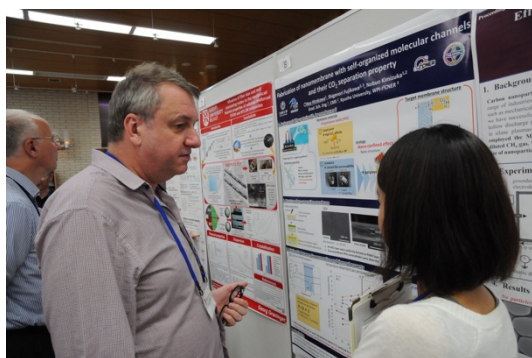


Figure 3 Poster Session



Figure 2 Group Discussion

4. Faculty Activities

Faculty members listened to students' shotgun presentations and then participated their poster presentations for discussion. In the Faculty Round-table discussion on Monday, 3 September, Professor Satoko Fukahori of Kyushu University talked on "Assessment of Engineering Learning

Outcomes Linking Abstract Program-level Competencies with Concrete/Course-level Learning Outcomes”, and then assessment of engineering education was discussed. On Tuesday, 4 September, Associate Professor James Cannon of Kyushu University first talked on “Practical experience of implementing efficient Active Learning in the classroom”, and then Professor Jeffrey Cross talked on “Tokyo Tech’s edX MOOC production process, learning analytics, and course utilization examples (on and off-campus)”. Finally Professor David Stewart of Tokyo Tech talked on “The ins and outs of MOOC making”. After that we discussed on active learning, MOOCs and related topics.



Figure 4 Lecture by Professor Satoko Fukahori



Figure 5 Faculty Discussion 1



Figure 6 Faculty Discussion 2

5. Field Trip

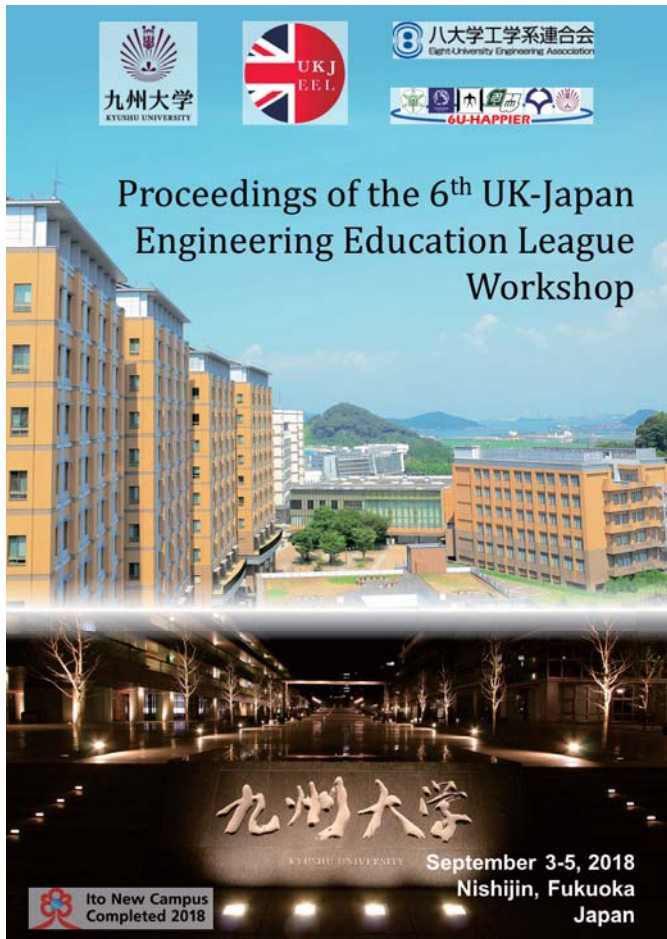
On Wednesday, 5 September, we had a field trip to observe Japanese sword manufacturing in Arao, Kumamoto. We also enjoyed canal cruise in Yanagawa to promote our friendship.



Figure 7 Japanese sword manufacturing

6. Next year plan

Next year's UKJEEL Workshop will be hosted by Queen Mary University of London in early September.



Proceedings of the 6th UK-Japan Engineering Education League Workshop

3RD-5TH SEPTEMBER, 2018
NISHIJIN PLAZA, FUKUOKA, JAPAN

HOSTED BY KYUSHU UNIVERSITY, FACULTY OF ENGINEERING

<http://irose.kyushu-u.ac.jp/ukjeel>
<https://www.facebook.com/UKJEEL/>

SUPPORTED BY EIGHT-UNIVERSITY ENGINEERING ASSOCIATION
AND 6U-HAPPIER

PROCEEDINGS EDITORS: JAMES J. CANNON AND DARREN P. WALL



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1 Scientific Programme

Monday 3rd September

Morning session (Venue: Nishijin Plaza, Fukuoka)
Chair: Assoc. Prof. James Cannon, Kyushu University

09:00	Registration desk opens
09:30	Welcoming remarks on behalf of Kyushu University <i>Prof. Yoshio Hisaeda, Dean of Engineering, Kyushu University</i>
09:45	Welcoming remarks on behalf of UKJEEL <i>Prof. Roderick A Smith, Imperial College London, UKJEEL chair</i>
10:00	Keynote lecture: Challenge for unlimited molecular design aiming for high performance organic optoelectronic devices <i>Prof. Chihaya Adachi, Director of the Centre for Organic Photonics and Electronics Research, Kyushu University</i>
10:40	break
10:50	Keynote lecture: Nanomaterials and nanobubbles for heat transfer <i>Prof. Koji Takahashi, Dept. of Aeronautics and Astronautics, Kyushu University</i>
11:30	Lunch & group photo

Afternoon session (Venue: Nishijin Plaza, Fukuoka)

Chair: Prof. Teppei Yamada, Graduate School of Engineering, Kyushu University

13:00	Poster shotgun presentations
13:30	Poster session

<Faculty>

Chair: Prof. Kikuo Kishimoto, Emeritus Professor, Tokyo Institute of Technology

15:00	Faculty round table discussion Lecture: Assessment of Engineering Learning Outcomes Linking Abstract Program-level Competencies with Concrete/Course-level Learning Outcomes <i>Prof. Sakoto Fukahori, UELI, Kyushu University</i>
15:35	Round-table discussion
17:00	Finish

<Students>

Chair: Prof. Megumi Takata, Dept. of Business and Technology Management, Kyushu University

15:00	Student groupwork Material requirements to meet future needs of society Required breakthroughs in technology and processing
18:00	Finish

18:15	Chartered bus departure from Nishijin plaza
19:00	Dinner at Uminomichi (see maps)

Afternoon session (Venue: Nishijin Plaza, Fukuoka and Kyushu University, Ito Campus)

Chair: Prof. Megumi Takata, Dept. of Business and Technology Management, Kyushu University

13:30	Student groupwork presentations
14:30	Closing remarks Proposal for UKJEEL 2019 by Prof. Wen Wang, Queen Mary University of London Announcements
14:40	Departure to Kyushu University's Ito campus
15:30	Laboratory tours
17:30	
18:00	Conference Banquet at Suginoaya (move together to venue/ return coach transport provided)

Tuesday 4th September**Morning session** (Venue: Nishijin Plaza, Fukuoka)

Chair: Prof. Sakoto Fukahori, The University Education Innovation Initiative, Kyushu University

09:55	Announcements
10:00	Practical experience of implementing efficient Active Learning in the classroom <i>Assoc. Prof. James Cannon, Dept. of Mechanical Engineering, Kyushu University</i>
10:30	Tokyo Tech's edX MOOC production process, learning analytics, and course utilization examples (on and off-campus) <i>Prof. Jeffrey Cross, Dept. of Transdisciplinary Science and Engineering, Tokyo Institute of Technology</i>
11:00	The ins and outs of MOOC making <i>Prof. David Stewart, School of Engineering, Tokyo Institute of Technology</i>
11:30	Discussion
12:00	Lunch time and student discussion time

Wednesday 5th September

08:45	Assemble at meeting point in Tenjin (- see 'Tour departure location' in maps)
09:00	Departure from Tenjin
10:00 to 12:30	Visit to Yanagawa including canal boat trip (weather permitting) and lunch
13:30 to 16:30	Visit to Katana (sword) manufacturer
18:00	Arrival in Tenjin

2 Welcome message from the Dean of Engineering at Kyushu University, Prof. Yoshio Hisaeda

I am delighted to welcome you to the 6th UK-Japan Engineering Education League Workshop, held for the first time at Kyushu University. Given the long history of academic collaboration between the UK and Japan in fields of engineering education and research which extends back more than 150 years, this event represents a important continuation of cultural and scientific exchange for current and future generations of scientists, and we are proud to be the hosts of the 6th UKJEEL workshop.



The Faculty of Engineering in Kyushu University is the fourth oldest faculty among Japanese universities, and was founded as the College of Engineering of Kyushu Imperial University in 1911. Since that time, as one of the key faculties of the leading universities in Japan, the faculty has contributed to the development of engineering, technology and industry in Japan and worldwide, providing leading research and enhanced engineering education. This year is particularly momentous: the ceremony to celebrate completion of our new campus "Ito Campus" is being held this September.

I hope you all take this opportunity to build personal and professional connections between the Japanese and the UK scientific communities, and that your visit to Kyushu University and the wider Fukuoka region is an interesting and enjoyable one.

Yoshio Hisaeda
Kyushu University
Dean of Engineering

4 Conference organising committee

Kyushu University

Yoshio Hisaeda	Local Chair, Professor, Dept. of Applied Chemistry
Hiroshi Takamatsu	Professor, Dept. of Mechanical Engineering
Yoshiko Miura	Professor, Dept. of Chemical Engineering
Masamichi Kohno	Professor, Dept. of Mechanical Engineering & International Education Support Center for Engineering
Qiang Chen	Professor, Dept. of Mechanical Engineering & International Education Support Center for Engineering
Kazuhiro Yasuda	Associate Professor, Dept. of Applied Quantum Physics and Nuclear Engineering
James Cannon	Associate Professor, Dept. of Mechanical Engineering & International Education Support Center for Engineering
Darren Wall	Associate Professor, Dept. of Aeronautics and Astronautics & International Education Support Center for Engineering
Teppey Yamada	Associate Professor, Dept. of Applied Chemistry
Chika Sonoda	Technical Staff
Saori Maruno	International Education Support Center for Engineering
Yumi Mizutani	Technical Staff
	International Education Support Center for Engineering

Tokyo Institute of Technology

Jeffrey S. Cross	Professor, Tokyo Institute of Technology
Daniel Berrar	Professor, Tokyo Institute of Technology
Takeshi Kuroshima	Technical staff, Tokyo Institute of Technology

3 Welcome message from the Chair of UKJEEL, Prof. Roderick A Smith

I am delighted to welcome you to the 6th UK-Japan Engineering Education League Workshop, held for the first time at Kyushu University. Given the long history of academic collaboration between the UK and Japan in fields of engineering education and research which extends back more than 150 years, this event represents a important continuation of cultural and scientific exchange for current and future generations of scientists, and we are proud to be the hosts of the 6th UKJEEL workshop. Welcome to Kyushu and its great university!



Kyushu has been known throughout the history of Japan as a international gateway with particularly close links to Korea and China and, of course, the tiny trading island of Dejima in Nagasaki which maintained trading with the European nations even though the long period when Japan was officially closed.

In the next few days, during the 6th UK Japan Engineering Education League (UKJEEL) workshop, we are going to explore modern issues of materials engineering and the ways it might contribute to building a better earth in the future. To our young students here is an opportunity to become involved in the great issues which face us: Important because our future is in the hands of you and your colleagues all over the world, the engineers of the future. To our older faculty colleagues we will demonstrate that learning is a lifelong process and we discuss ideas to improve our teaching and enrich the learning experience we offer to our students. But we also have time to explore together the delights of Kyushu, old and new.

Kyushu University has a very strong international engineering presence. I am sure you will return home having fallen in love with this magical part of Japan: the interplay between sea and mountains, the wonderful food, the onsens and, of course, the warm and hospitable people.

Enjoy Kyushu and UKJEEL 2018!

Roderick A Smith
Imperial College London
Chair UKJEEL

5 List of Participants

Prof. Naoya Abe	Tokyo Institute of Technology
Prof. Chihaya Adachi	Kyushu University
Prof. Yasunori Aizawa	Tokyo Institute of Technology
Mr Rei Akahoshi	Nagoya University
Mr Kohei Aso	Kyushu University
Mr Seiji Azukizawa	Kyushu University
Prof. Daniel Berrar	Tokyo Institute of Technology
Dr Andrea Cammarano	University of Glasgow
Prof. James Cannon	Kyushu University
Prof. Qiang Chen	Kyushu University
Mr Xiaosheng Chen	Tokyo Institute of Technology
Prof. Yonghwan Cho	Nagoya University
Mr Chitiphon Chuacham	Kyushu University
Prof. Jeffrey Cross	Tokyo Institute of Technology
Ms Yuka Fujiki	Hokkaido University
Prof. Sakoto Fukahori	Kyushu University
Mr Georg Graninger	Queen's University Belfast
Ms Nao Hirakawa	Kyushu University
Prof. Yoshio Hisaeda	Kyushu University
Mr Sung Hwang	Kyushu University
Prof. Shigekazu Ito	Tokyo Institute of Technology
Prof. Nobuyuki Iwatsuki	Tokyo Institute of Technology
Mr Rikiya Kado	Tokyo Institute of Technology
Prof. Tetsuya Kadosono	Tokyo Institute of Technology
Prof. Kuniyuki Kakushima	Tokyo Institute of Technology
Emeritus Prof. Kikuo Kishimoto	Tokyo Institute of Technology
Prof. Kiyonobu Kasama	Tokyo Institute of Technology
Ms Naoto Kimura	Tokyo Institute of Technology
Prof. Masamichi Kohno	Kyushu University
Mr Naoki Kumagai	Tohoku University

Mr Nattanai Kunanusont	Tokyo Institute of Technology
Mr Hikaru Kurasawa	Tokyo Institute of Technology
Dr Mu Li	Tokyo Institute of Technology
Mr Siyi Li	Tokyo Institute of Technology
Mr Jun Liu	Imperial College London
Prof. Stephen Lyth	Kyushu University
Mr Khajeh Manafi Pasha Siavash	Kyushu University
Prof. Stephane Matsushita Yu	Tohoku University
Prof. Tsuyoshi Michinobu	Tokyo Institute of Technology
Prof. Yoshiko Miura	Kyushu University
Ms Nanoka Miyahara	Kyushu University
Prof. Junko Morikawa	Tokyo Institute of Technology
Mr Yuya Murakami	Tokyo Institute of Technology
Mr Masamichi Murayama	Tokyo Institute of Technology
Prof. Nobuo Nakada	Tokyo Institute of Technology
Prof. Norihiro Nakai	Tokyo Institute of Technology
Mr Yutaka Nakano	Tokyo Institute of Technology
Prof. Akinori Nishihara	Tokyo Institute of Technology
Prof. Takumi Ohashi	Tokyo Institute of Technology
Prof. Tatsuya Okubo	The University of Tokyo
Dr John Shackleton	University of Glasgow
Prof. Yusuke Shimoyama	Tokyo Institute of Technology
Prof. Nobuaki Shiraki	Tokyo Institute of Technology
Prof. Masaharu Shiratani	Kyushu University
Mr Dan Smith	Queen's University Belfast
Prof. Roderick A Smith	Imperial College London
Prof. David Stewart	Tokyo Institute of Technology
Prof. Yuko Suto	Tohoku University
Prof. Atsushi Takahashi	Tokyo Institute of Technology
Prof. Koji Takahashi	Kyushu University
Prof. Hiroshi Takamatsu	Kyushu University
Prof. Megumi Takata	Kyushu University

Mr Kazuma Tanaka	Kyushu University
Mr Kazuki Tokumaru	Kyushu University
Prof. Yuji Wada	Tokyo Institute of Technology
Prof. Darren Wall	Kyushu University
Prof. Wen Wang	Queen Mary University of London
Dr Ian Watson	University of Glasgow
Prof. Elizabeth Webeck	Tohoku University
Ms Yuanhao Wu	Queen Mary University of London
Mr Ji Xia	Tohoku University
Prof. Kousuke Yakubo	Hokkaido University
Prof. Akira Yamada	Tokyo Institute of Technology
Prof. Teppei Yamada	Kyushu University
Prof. Kazuhiro Yasuda	Kyushu University
Ms Jaebong Yeon	Osaka University

6 Abstracts

List of Abstracts

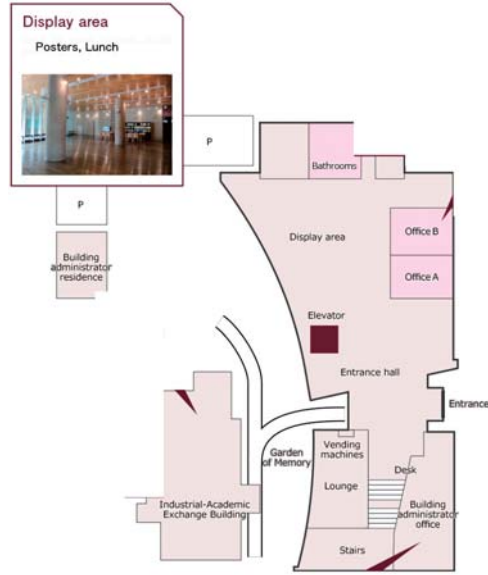
- A1 R. Akahoshi, Y.H. Cho, T. Nakamura & N. Mizutani, *Suspended Behavior of Clay on Mixed Sediment under Regular Wave Action*
- A2 K. Aso, J. Maebe, T. Yamamoto & S. Matsumura, *Precise measurement of lattice strain in gold nanoparticles*
- A3 S. Azukizawa, H. Shinoda & F. Tsumori *Development of 4D Printing System with Magnetic Anisotropy*
- A4 X. Chen, S. Suzuki, M. Sakaguchi & H. Inoue *Crystal plasticity analysis for temperature dependent fatigue crack propagation in a single crystal nickel-base superalloy*
- A5 C. Chuaicham and K. Sasaki, *Photocatalytic Cr(VI) Reduction by ZnTi Layered Double Hydroxide/Montmorillonite Composite*
- A6 Y. Fujiki & K. Yakubo, *General framework to analyze long-range degree correlations in complex networks*
- A7 G. Graninger, B.G. Falzon & S. Kumar *Influence of filler size and melt processing routes on the mechanical/thermal properties of cellulose reinforced EVOH and NYLON composites*
- A8 N. Hirakawa, S. Fujikawa & N. Kimizuka *Fabrication of nanomembrane with self-organized molecular channels for preferential CO₂ separation*
- A9 S.H. Hwang, K. Kamataki, N. Itagaki, K. Koga, & M. Shiratani *Effects of CH₄ Concentration on Size of Carbon Nano-Particles Formed in Multi-hollow Discharge Plasma*
- A10 R.Kado, G. Lelong, T. Kishi, G. Calas & T. Yano, *Local structure of iron ions in aluminosilicate glasses*
- A11 N. Kimura, N. Iwatsuki & I. Ikeda, *Expansion of Kinematic Constraints in Linkage Mechanism with New Joints*
- A12 N. Kumagai, T. Nagasaka *High grade rutile manufacturing method from ilmenite ore based on relatively low temperature oxidizing in air*
- A13 N. Kunanusont & Y. Shimoyama, *Development of carbon porous electrode for Li-O₂/CO₂ battery using supercritical drying*

- A14 H. Kurasawa, H. Yamashita & Y. Aizawa, *Re-design and Synthesis of Yeast Chromosome*
- A15 M. Li & M. Susa, *Thermal Conductivity Evaluation of Thermally Grown FeO Scale on Steel*
- A16 J. Liu, C. Kaboglu, H. Liu, B.R.K. Blackman, A.J. Kinloch & J.P. Dear, *High Speed Digital Image Correlation For Impact Performance of Thermoplastic and Thermoset Composites*
- A17 N. Miyahara, M. Shiratani & N. Itagaki, *Photoluminescence of (ZnO) 0.92 (InN) 0.08 films -Fabrication temperature dependence*
- A18 Y. Murakami & Y. Shimoyama, *Continuous Production of Lopsome Using Supercritical-Fluid-Based Technique*
- A19 M. Murayama, H. Tsutsui & S. Tsuji-Iio, *Neutron-induced Defect in First Wall of Nuclear Fusion Reactor*
- A20 S. Nakano, K. Tanaka, H. Hara, L. Shi, D. Yamashita, K. Kamataki, N. Itagaki, K. Koga & Masaharu Shiratani, *Improvement of Si network order of a-Si:H thin films by suppressing incorporation of HOS molecules*
- A21 Y. Ogawa, J. Yamabe, H. Matsunaga & S. Matsuoka, *Hydrogen embrittlement resistance of a high-strength copper-based alloy, CDA-C17200*
- A22 S.M.K. Pasha, H. Hazarika & N. Yoshimoto, *Modeling Void Ratio Characteristics of Soil Mixed with Recycled Tire Chips Using Artificial Intelligence*
- A23 L. Siyi & J. S. Cross, *Electron structure on Ni_aCo_b (2 ≤ a + b ≤ 6) cluster catalyst for pyrolysis*
- A24 D. Smith & R. Douglas, *Fuzzy Rule-Based Energy Management Strategy for a Parallel Mild-Hybrid Electric Bus*
- A25 K. Tokumaru & F. Tsumori, *Micro Co-molding of Laminated Ceramic Material by Imprinting Method*
- A26 Y. Wu, A. Mata & W. Wang, *Molecular Co-assembly of a Peptide/protein 3D Vessel for Bioengineering Applications*
- A27 J. Xia, X. Xu, T. Omori & R. Kainuma, *Entropy change during bcc/fcc martensitic transformation in Fe-Mn-Al-Ni shape memory alloy*
- A28 J. Yeon, M. Nakamoto & T. Tanaka, *Joining of Metals using Super-Spread Wetting*

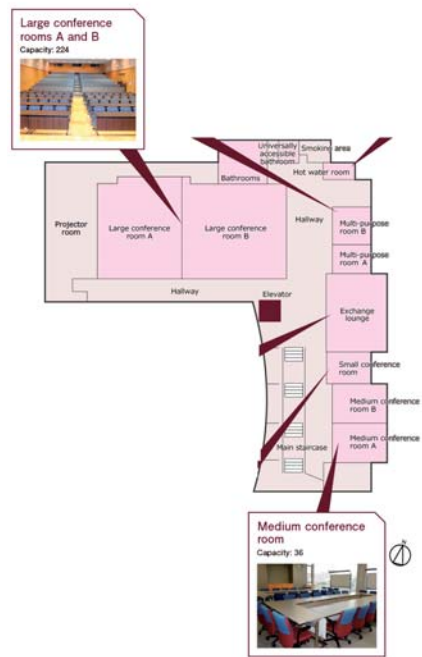
7 Maps

Nishijin Plaza

Ground Floor (1F)



First Floor (2F)



Nishijin Station → Nishijin Plaza



Uminomichi (Dinner location, Mon, 3rd September)

B1, Tenjin Kimuraya Bldg, 1-12-3, Tenjin, Chuo-ku, Fukuoka-shi, Fukuoka-ken, 810-0001



Suginoya (Conference Banquet, Tues, 4th September)

1442 Motooka, Nishi Ward, Fukuoka, Fukuoka Prefecture 819-0385, Japan



Tour departure location

Please arrive at the tour departure location in advance of the scheduled departure time, so that the coach can leave on time. The meeting place is in front of the Fukuoka branch of the Bank of Japan, just a few minutes walk from Tenjin station.



Underground map

