1. Overview

**November 11:** Registration
16:30-18:00  Registration at Hotel Fujita Nara
17:00-18:00  Beer Party

**November 12:** Technical Tour and Welcome Party
08:30  Lobby in Hotel Fujita Nara. Walk to tour bus
10:30-13:30  Visit to Kao Corporation at Wakayama and lunch
13:30-16:00  Move and visit to Sumitomo Metals Ltd. at Wakayama
18:00  Back to Hotel Fujita Nara
19:00-21:00  Welcome Party at Hotel Fujita Nara

**November 13:** Symposium at Nara-ken New Public Hall
09:00 - 10:30  Lectures (L-1, L-2, and L-3 at Nohgaku-doh)
10:30 - 11:00  Coffee break
11:00 - 12:00  Lectures (L-4 and L-5 at Nohgaku-doh)
12:00 - 13:30  Lunch (at Restaurant Noh)
13:30 - 14:45  5-min oral presentation for posters (P-1 to P-15) *
14:45 - 16:30  Poster session and coffee break
16:30 - 17:00  Special lecture Prof. Onken, “Chemical Engineering at German Universities”
17:00 - 17:45  Attraction (at Nohgaku-doh; Koto and Shakuhachi)
18:00 - 20:00  Dinner (at Restaurant Noh)

**November 14:** Symposium
09:00 - 10:30  Lectures (L-6, L-7, and L-8 at Nohgaku-doh)
10:30 - 11:00  Coffee break
11:00 - 12:00  Lectures (L-9 and L-10 at Nohgaku-doh)
12:00 - 13:30  Lunch (at Restaurant Noh)
13:30 - 15:05  5-min oral presentation for posters (P-16 to P-34) *
15:05 - 17:00  Poster session and coffee break
17:00 - 19:00  Farewell Party (at Restaurant Noh)
*(5 min oral presentation for posters: at Nohgaku-doh)

2. Program

**Lectures**

- **L-1** A. Lübbert  
  Modelling of airlift loop reactors in particular consideration of gas circulation
- **L-2** M. Ohta, S. Haranaka, Y. Yoshida, and M. Sussman  
  Three-dimensional numerical simulations of the motion of a gas bubble rising in viscous liquids
- **L-3** E. Bourloutski and M. Sommerfeld  
  Modelling of bubble tumbling motion in the frame of the Euler/Langrange approach
- **L-4** H. Takeda, N. Esaki, Y. Kawase  
  Simulation of multiphase flows with bubble coalescence and break-up in bubble columns using Euler-Euler and Euler-Lagrange models
- **L-5** M. Schlueter, S. Scheid, S. John, N. Raebiger  
  Fluidization of fine particles in bubble wakes effects hydrodynamics in three-phase flows
- **L-6** H. Fukuhara and K. Ueyama  
  Study on Adsorption and Desorption Mechanisms at the Interface on the Basis of Experimental Data of Bubble Coalescence Time
- **L-7** F. U. Becker, S. Ledakowicz, and W.-D. Deckwer  
  Microbial removal of ionic mercury in a three-phase fluidized bed reactor
- **L-8** H. T. Kim, S. M. Son, P. S. Song, Y. Kang, C. K. Lee and K. Kusakabe  
  Diagnosis of Bubbling Behavior in Gas-Liquid Countercurrent Bubble Column Bioreactors
- **L-9** E. Kojima and B. Lin  
  Turbulent flow measurements of microalgal cell suspension in bubble column bioreactors.
- **L-10** A. Tatani, T. Imai, and Y. Fujima  
  Sulfite Oxidation Reaction Rate in FGD Absorber Tank
**Poster Session**

(5 min oral presentation at Nohgaku-doh)

**Fundamentals of Bubble Columns**
P-1 M. Hashimoto, S. Kanayama and K. Ueyama
Chaotic Structure of Recirculating Turbulent Flow in A Bubble Column

P-2 W. Chen and A. Tsutsumi
Wavelet and chaos analyses of dynamic flow pattern in bubble columns

P-3 K. Tsuchiya and H. Fukuta
Oscillating Characteristics of a Rising Bubble and the Corresponding Bubble Lifetime

P-4 D. Bröder and M. Sommerfeld
Experimental analysis of the meso-scale structure in bubble columns

P-5 K. Terasaka, Y. Inoue, M. Kakizaki and M. Niwa
Simultaneous measurement of 3-dimensional shape and behavior of single bubble in liquid using laser sensors

P-6 R. Köpsel, and P. Kuchling
Airlift reactor with internal and external loop: Parameter calculation

P-7 S. Kihara, M. Kawagoe, and H. Noda
Simultaneous Measurement of Interfacial Area and Bubble Size by Laser Beam Transmission Method

P-8 J. Grän-Heedfeld, and S. Schlüter
Gas Circulation in Internal Airlift Loop Reactors

P-9 R. Shima, F. Hayakawa and H. Kojima
Gas Holdup and Bubble Behavior in Pressurized Bubble Column

P-10 O. Lorenz, P. T. Fonkou, G. Kundu and A. Schumpe
Liquid mixing in a high-pressure bubble column

P-11 M. Dani Supardan, A. Maetzawa, and S. Uchida
Local Gas Holdup and Mass Transfer in a Bubble Column using Ultrasonic Method and Neural Network Model

P-12 H. Grafmans, and A. Steiff
Gas induced injection of liquid inhibitor agents

Liquid Circulation and Mass Transfer in External-Loop Airlift Reactor with Partitioning Plate

P-14 R. D. Pilz, E. U. Mahnke, and D. C. Hempel
Mechanical Stresses in Bubble Columns and Airlift Loop-Reactors Operated in Two and Three Phase Mode

Effect of Partitioning Plate on Mass Transfer in Multistage Bubble Column

**Computational Fluid Dynamics (CFD) and Simulation**
P-16 K. Junghans, A. Lapin, and A. Lübbert.
Flow velocity patterns in inclined bubble columns

P-17 A. Matsuura, H. Sakakibara, S. Hiraoka, Y. Tada and Y. Kato
Numerical Simulation for Laminar Two-phase Flow Velocity Fluctuation

P-18 D. Bothe, U. Gerigk, and H.-J. Warnecke
Hydrodynamic macro-mixing in two-phase bubble columns - Euler-Euler simulations validated by integral measurement techniques

P-19 T. Matsumura, Y. Kobayashi and Y. Kawase
Hydrodynamics and Mixing Time in a Two-Dimensional Bubble Column

**Application of Bubble Columns in Biotechnology**
P-20 Y. Arimatsu, J. Bao, K. Furumoto, M. Yoshimoto, K. Fukunaga and K. Nakao
Continuous Production of Calcium Gluconate Crystals in an Integrated Bioreaction- Crystallization Process Using External Loop Airlift Bubble Columns with Immobilized Glucose Oxidase Gel Beads

P-21 M. Yoshimoto, S. Wang, Y. Arimatsu, K. Furumoto, K. Fukunaga and K. Nakao
Characterization and Performance of Mini-Scale External Loop Airlift Bioreactor for Evaluating Immobilized Glucose Oxidase-Containing Liposomes

P-22 K. Asamü, Y. S. Tan and K. Ohtaguchi
Biosynthesis of Polysaccharide Alginate by Azotobacter vinelandii in Bubble Column

P-23 M. Kawagoe, Y. Nagaoka, M. Araki, K. Yamagami, and H. Noda
Submerged Culture of Agaricus blazei Mycelium in Bubble Column Fermentors

P-24 A. Wijanarko, K. Asami and K. Ohtaguchi
Kinetics of Growth and CO₂ Concentrating Mechanism of the Filamentous Cyanobacterium Anabaena Cylindricalica in Bubble Column

P-25 H. Nagami, H. Umakoshi, T. Shimanouchi, R. Kuboi and M. Yoshimoto
Design of Artificial SOD Liposome for the Control of Oxidative Stress in Air-lift
4. Access to Nara

Transportation to Nara from abroad is shown in the following diagram. The most convenient means of transportation is to take a direct flight to the Kansai International Airport (KIX). From there, the simplest route to Nara is by the Airport Limousine Bus, which takes approximately 85 minutes to arrive at Nara Hotel and Nara Station (Kintetsu and JR lines). This costs ¥1,800 one way, per person. Buses depart from stop No.9 and are scheduled to depart approximately once every 60 minutes. Should there be any inquiries regarding access to Nara, please ask at the Information Desk at the airport on the first floor in front of the arrivals area.

From Nara Station, city bus numbers 2 or 6, or buses bound for Takabatake-cho may be taken to bus stop, “Daibutsu-den Kasugataisha Mae” (approximately a five-minute ride). From there it is only a three-minute walk to the Nara-ken New Public Hall (Shin-kokaido). Buses run every five minutes. The basic fare for a taxi is ¥590 per 1.5km. The cost of a taxi from JR Nara Station, or Kintetsu Nara Station to the Nara-ken New Public Hall (Shin-kokaido) should be around ¥680~¥800.

It is recommended that participants planning to travel in Japan purchase a Japan Rail Pass. This pass encompasses all JR trains including the Bullet train (Shinkansen) and the Narita Express. Please note that this pass must be purchased prior to arrival since it can not be

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3. Poster

Poster board whose width and height are 180 cm and 120 cm is set at 60 cm high on the floor. Each poster is pasted on the numbered board between 8:45 and 13:30 on November 13.

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Application of Bubble Columns

P-31 M. Schluter, S. Scheid, S. John, and N. Raebiger
Fluidization of fine particles in bubble wakes affects hydrodynamics in three-phase flows

P-32 K. Kubota, M. Shimomichi, R. Tsuda and H. Imakoma
A Study on a Continuous Flotation of the Protein Particles

P-33 Y. Bando, T. Sasagawa, K. Doi, K. Yasuda and M. Nakamura
Development of Bubble Column with Gas-Liquid Simultaneous Injection Nozzle and Downcomer for Ozone Oxidation Method

P-34 K. Muroyama, M. Yamasaki, M. Shimizu, E. Shibutani and T. Tsuji
Modeling and Scale-up Simulation of U-tube Ozone Oxidation Reactor for Treating Drinking Water
purchased in Japan. The price for a 7-day pass is about ¥30,000.

5. Hotel Fujita Nara

Each participant should make a reservation by facsimile. The facsimile reservation sheet is enclosed (the reservation sheet has already been sent via e-mail for contributors). Please find it and make a reservation for accommodation. Hotel Fujita Nara (simply, Hotel Fujita) is located at 5 min. walk from Kintetsu Nara Station or JR Nara Station.

6. Registration fee

Cash (Japanese Yen) is only accepted for the registration fee. Participants can exchange money at Nanto Bank located near Hotel Fujita Nara. Exchange of money is also available in Hotel Fujita.

7. Brief guide on Nara

Nara, a beautiful ancient city of World Heritage, is cultural and historical important place in Japan, having been the capital of the country in 710-784 A.D. There are numerous temples, shrines, statues, carvings and paintings, many of which are well-preserved and designated as important cultural assets and national treasures. Nara-ken New Public Hall is situated in Nara Park, where you can also find famous historical buildings such as Todai-ji Temple, Koufuku-ji Temple, and Kasuga Grand Shrine. Nara park is also famous for its thousands of tame deer that roam freely.