

# Program of the 4th Asian Symposium on Electrochemical Impedance Spectroscopy (AEIS2024)

## Organizers and Sponsors

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# Monday, 25 November 2024 - Morning

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## Opening

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9:00 to 9:10

**Yoshinao HOSHI** (Chairperson and Local Organizing Committee of AEIS2024, Japan) and  
**Kazuhisa AZUMI** (President of Japan Society of Corrosion Engineering, Japan)

Introductory Remarks

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## Plenary

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*Chaired by: Yoshinao HOSHI*

9:10 to 9:40

**Jianbo ZHANG** (Tsinghua University, China)

Characterization of Water Electrolysis Using EIS

9:40 to 10:10

**Masayuki ITAGAKI** (Tokyo University of Science, Japan)

Impedance Analyses on Non-stationary Electrodes

10:10 to 10:40

**Burak ÜLGÜT** (Bilkent University, Turkey)

Using Temperature and Non-Linearity to Match Impedance Spectra and Underlying Processes

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## Oral Presentation - Room A

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*Chaired by: Yusuke TSUTSUMI*

10:50 to 11:10 (Invited)

**Mari MAEDA** (Central Research Institute of Electric Power Industry, Japan), Kenji YASUMOTO,  
and Junichi TANI

Evaluation of Deteriorated Painted Steels for Transmission Towers by Electrochemical Impedance Spectroscopy

11:10 to 11:30

**Yasuhiko SAIJO** (Syrinx Co., Ltd., Japan), Jun KOBAYASHI, and Tomoyasu SUZUKI

Corrosion Monitoring of Aluminum Using ICM Sensor

11:30 to 11:50

**Masatoshi SAKAIRI** (Hokkaido University, Japan), Takuma YAMAMOTO, and Tong SHEN

Investigation of Corrosion Behavior of Metals in Low Temperature Solutions with EIS

11:50 to 12:10

**Xingyue YONG** (Beijing University of Chemical Technology, China), Zhuoxuan LI, and Haotian JI

Studies on the Surface Morphology of an Electrode Based on EIS Spectra

## Oral Presentation - Room B

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*Chaired by: Jong-Sook LEE*

10:50 to 11:10 (Invited)

**Hirofumi SUMI** (National Institute of Advanced Industrial Science and Technology, Japan)

Distribution of Relaxation Times Analysis for Solid Oxide Fuel Cells

11:10 to 11:30

**Yuji OKUYAMA** (University of Miyazaki, Japan), Keita KASUGA, Yuichi MIKAMI, Kosuke YAMAUCHI, Tomohiro KUROHA, and Hirofumi SUMI

Hydrogen Isotope Effects on the Impedance of Electrodes in Protonic Ceramic Fuel Cells

11:30 to 11:50

**Mina YAMAGUCHI** (Tohoku University, Japan), Yuki AMANO, Riyan Achmad BUDIMAN, Keiji YASHIRO, and Tatsuya KAWADA

The Effect of Particle Size on the Reaction Mechanism of Porous  $\text{La}_{0.6}\text{Sr}_{0.4}\text{CoO}_{3-\delta}$  Air Electrodes

11:50 to 13:20

Lunch

# Monday, 25 November 2024 - Afternoon

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## Oral Presentation - Room A

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*Chaired by: Mari MAEDA*

13:20 to 13:40

**Eiji TADA** (Institute of Science Tokyo, Japan), Junho JANG, and Azusa OOI

Electrochemical Impedance Analysis of Galvanic Corrosion Behavior of Zn and Al Couples in Aqueous NaCl Solution

13:40 to 14:00

**Yusuke TSUTSUMI** (National Institute for Materials Science, Japan)

Long-Term Biosafety Evaluation of Metallic Biomaterials Using Simple EIS Measurements in Simulated Body Fluid

14:00 to 14:20

**Zhuoxuan LI** (Beijing University of Chemical Technology, China) and Xingyue YONG

Study on the Synergistic Effect of Alternating Loads and Corrosion Based on EIS Parameters of Organic Coatings

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## Oral Presentation - Room B

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*Chaired by: Yuki YAMAGUCHI*

13:20 to 13:40 (Invited)

**Reona MIYAZAKI** (Nagoya Institute of Technology, Japan)

Impedance of the Solid-State Li<sup>+</sup> Cell with Li<sup>+</sup>-Doped NaI

13:40 to 14:00

**Koji AMEZAWA** (Tohoku University, Japan), Motoya KARINO, Yuta KIMURA, Takashi NAKAMURA, Tatsuya KAWADA, Hiroyuki SHIMADA, Hirofumi SUMI, and Yasunobu MIZUTANI

Influence of Minor Electronic Conduction in the Electrolyte on the Impedance Response of Solid-State Ionic Devices

14:00 to 14:20

**Naoto TANIBATA** (Nagoya Institute of Technology, Japan), Shin AIZU, Hayami TAKEDA, Masanobu NAKAYAMA, and Ryo KOBAYASHI

Resistance Separation in Powder-Pressed Materials for All-Solid-State Lithium-Ion Batteries

14:20 to 14:30

Coffee Break

14:30 to 15:50

Poster Presentation

15:50 to 16:00

Coffee Break

## Oral Presentation - Room A

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*Chaired by: Jianbo ZHANG*

16:00 to 16:20 (Invited)

**Tokihiko YOKOSHIMA** (Nagoya University, Japan)

Quality of Electrochemical Impedance Spectroscopy Using DC Power Systems

16:20 to 16:40 (Invited)

**Hiroki NARA** (Waseda University, Japan)

EIS for Evaluation of Structured Catalysts and Devices on Fuel Cells

16:40 to 17:00

**Jusuke SHIMURA** (Murata Manufacturing Co., Ltd., Japan), **Daisuke TAKATA**, **Hikari WATANABE**, **Isao SHITANDA**, and **Masayuki ITAGAKI**

Efficient Diagnosis of Second-Hand Lithium-Ion Battery Health Without State-of-Charge Adjustment

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## Oral Presentation - Room B

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*Chaired by: Hirofumi SUMI*

16:00 to 16:20 (Invited)

**Jong-Sook LEE** (Chonnam National University, Korea)

Physics-Based Impedance Spectroscopy for Polycrystalline Mixed-Ionic-Electronic-Conductors

16:20 to 16:40

**Yuki TAKEDA** (Tohoku University, Japan), **Marika SAKAI**, **Riyan Achmad BUDIMAN**, **Mina YAMAGUCHI**, **Keiji YASHIRO**, and **Tatsuya KAWADA**

Non-Linear Electrochemical Impedance Spectroscopy Analysis of Gas Diffusion in Anode-Supported Cell

16:40 to 17:00

**Tran Thi Huyen TRAN** (Chonnam National University, Korea), **Thuy Linh PHAM**, **Lan TRAN**, **Ngoc Tran TRAN**, **Jang-Koon KIM**, and **Jong-Sook LEE**

Advanced Numerical Simulation and Modeling for Human Body Segment Impedance Analysis

17:10 to 17:20

Taking Group Photo

18:30 to 20:30

Conference Dinner

# Tuesday, 26 November 2024 - Morning

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## Oral Presentation - Room A

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*Chaired by: Burak ÜLGÜT*

9:00 to 9:20

**Gahyeon LEE** (Gwangju Institute of Science and Technology, Korea), Jong-Sook LEE, and Jong Hoon JOO

Comprehensive Understanding of Performance-Determining Resistance in Alkaline Water Electrolysis Based on Electrochemical Impedance Spectroscopy: Effects of Electrode Microstructural and Operating Potential

9:20 to 9:40

**Ryuta MISUMI** (Yokohama National University, Japan) and Shigenori MITSUSHIMA

Mass Transfer Model through Bubble Layer Covering an Electrode in Alkaline Water Electrolysis

9:40 to 10:00

**Caihan ZHU** (Chinese Academy of Sciences, China), Yunan WANG, and Tao WU

Effect of Catalyst Carbon Shell Coating Modification on Proton Conductivity of Catalyst Layer

10:00 to 10:20

**Huabin ZHANG** (King Abdullah University of Science and Technology, Saudi Arabia)

Mechanism Study of Localized Charge Accumulation Accelerated Proton Exchange Membrane Electrolysis via Operando EIS

10:20 to 10:30

Coffee Break

10:30 to 11:00

Poster Awards Ceremony

11:00 to 11:10

Closing Remarks

Local Organizing Committee of AEIS2024

# Monday, 25 November 2024 - Afternoon

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## Poster

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Co-Chaired by: Yoshinao HOSHI and Masayuki ITAGAKI

P-01

**Kota OKUZUMI** (Tokyo University of Science, Japan), Hikari WATANABE, Isao SHITANDA, and Masayuki ITAGAKI

Evaluation of Battery Performance of Aqueous LIB with SCES by *in-situ* EIS

P-02

**Yuki KINO** (Nagoya Institute of Technology, Japan), Shinya KATO, and Yoshinao HOSHI

3D Impedance Analysis on Dissolution Behavior of Stainless Steel Covered with Oxide Thin Film in PEFC Simulated Environment

P-03

**Junqing BAO** (Shibaura Institute of Technology, Japan), Leonardo HASATANI The Third, Ryouji SUZUKI, Yuta YAGI, and Kazuhiko NODA

Electrochemical Behavior of Pure Iron Covered by Zinc Rich Paint

P-04

**Tran Thi Huyen TRAN** (Chonnam National University, Korea), An Giang NGUYEN, Intizar ABBAS, Chan-Jin PARK, and Jong-Sook LEE

Impedance Analysis of Electrolytes Using Nernst-Planck Theory and Transmission Line Models

P-05

**Yuri KURAMOTO** (Nagoya Institute of Technology, Japan) and Yoshinao HOSHI

Corrosion Detection of Al Alloy Covered with Adhesive by Electrochemical Impedance Spectroscopy

P-06

**Shinji KAKUYA** (Tokyo University of Science, Japan), Jusuke SHIMURA, Hikari WATANABE, Isao SHITANDA, and Masayuki ITAGAKI

Attempt to Estimate Heat Generation Inside Lithium-Ion Batteries Using Thermal Circuit Model

P-07

**Yu QIN** (Chinese Academy of Sciences, China), Dewei LI, Caihan ZHU, and Yunan WANG

Study on Proton Conduction Resistance of Fuel Cells by Modifying Catalyst Surface

P-08

**Keigo HATTA** (Shibaura Institute of Technology, Japan), Yoshiya SUGIMOTO, Yuta YAGI, and Kazuhiko NODA

Effect of Chemical Conversion Coated Film on Corrosion Resistance of Galvanized Steel

P-09

**Kaito KITO** (Nagoya Institute of Technology, Japan), Yoshinao HOSHI, Itaru IKEDA, Motoki KURATANI, and Noriyuki TANAKA

Impedance Analysis on Dissolution Behavior of Copper Tubes with Carbon Film

P-10

**Chan-Woo PARK** (Chonnam National University, Korea), Tran Thi Huyen TRAN, Intizar ABBAS, Sung-Bong YOO, Ohjeong LEE, Jaekook KIM, and Jong-Sook LEE

Physics-Based Modeling of Battery EIS and Its Application in Diagnostic Technologies

P-11

**Kanta ONODERA** (Tokyo University of Science, Japan), Jusuke SHIMURA, Hikari WATANABE, Isao SHITANDA, and Masayuki ITAGAKI

Preventing Unexpected Rapid Charging of Deteriorated Cells in Repurposed Energy Storage Systems

P-12

**Sungbong YOO** (Chonnam National University, Korea), Intzar ABBAS, Chanwoo PARK, and Jong-Sook LEE

Nonlinear Impedance Analysis of Ceramics Materials

P-13

**Mitsutoshi MATSUMORI** (Shibaura Institute of Technology, Japan), Ryuichi KOBORI, Yuta YAGI, and Kazuhiko NODA

Effect of Stress on Localized Corrosion Behavior in Stainless Steel

P-14

**Kohki NAGAYA** (Nagoya Institute of Technology, Japan) and Yoshinao HOSHI

3D Impedance Analysis of Mg Dissolution under Anodic Polarization

P-15

**Go HORIUCHI** (Tokyo University of Science, Japan), Jusuke SHIMURA, Hikari WATANABE, Isao SHITANDA, and Masayuki ITAGAKI

Impedance Parameters and Nonlinearity in Lithium-Ion Batteries with Inhomogeneous Temperature Distribution

P-16

**Daiki KOKETSU** (Nagoya Institute of Technology, Japan), Shinya KATO, and Yoshinao HOSHI

3D Impedance Measurement to Monitor Etching Rate on Metal-Assisted Chemical Etching of Silicon Electrode with Deposited Silver Particles

P-17

**Oh Jeong LEE** (Chonnam National University, Korea), Chan-Woo PARK, Tran Thi Huyen TRAN, Intizar ABBAS, Jaekook KIM, and Jong-Sook LEE

EIS Analysis of Half-Cells and 3-Electrode Cells