

# Tuesday November 29

11:15 ~ 11:30

## **Opening Remarks**

Prof. Hoecil Chung

11:30 ~ 12:00

## **Spectral imaging technologies for agricultural applications**

Plenary Presentation (Dr. Moon S. Kim)

## **Session1(Agricultural food material)**

Session chair: Prof. Geonwoo Kim

12:00 ~ 12:20

## **Estimation of total alkaloids in Cinchona bark using a developed portable NIR**

Dilip Sing, Subhadip Banerjee, Ranajoy Mallik, Kalyan Majumdar, Uden Angmu Yonzone, Samuel Rai, Amitabha Bandyopadhyaya, and Rajib Bandyopadhyay (Keynote speaker)

12:20 ~ 12:35

## **The Near Infrared Spectroscopy Model Lowest Limit of Detection and Quantification for Nutrient in Durian (CV Monthong) Leaf Evaluation**

Thitima Phanomsophon, Natthapon Jaisue, Akarawhat Worphet, Nukoon Tawinteung, Lampan Khurnpoon and Panmanas Sirisomboon

12:35 ~ 12:50

## **An experimental study of light scattering changes in kiwifruit during storage using time-resolved transmittance spectroscopy**

Te Ma, Tetsuya Inagaki, Peixin Xiao, and Satoru Tsuchikawa

12:50 ~ 13:05

## **FT-NIR, Digital NIR spectroscopic and chemometric models for moisture and protein content determining of cassava flour**

Panuwat Supprung, Dachawat Munklang, Prasit Sopa

13:05 ~ 13:20

## **Exploratory of precision in spectral acquisition and reference methodology of NIR spectroscopy in evaluation of crosslink density of natural rubber medical glove**

Suppakit Howvimanporn, Jiraporn Sripinyowanich Jongyingcharoen, Thanaphol Salabsee, Adisak Kongwaree, Chin Hock Lim, Suntaree Dachapan, Kittisak Phetpan, Jetsada Posom, Panmanas Sirisomboon

13:20 ~ 13:35

## **Discrimination of olive oils by geographical origin using a regularized logistic regression model**

Soh Chin Gi, Zhu Ying

13:35 ~ 13:50

## **Nondestructive measurement of inside quality of eggs using Vis/NIR spectrometer**

Semyalo Dennis , Juntae Kim , Collins Wakholi , Byoung-Kwan Cho

13:50 ~ 14:05

## **Preliminary of using Portable Micro NIR Spectrometer for Measuring of Microbial load in Chicken Meat**

Milka Nakarmi, Anjana Singh, Dev Raj Joshi, Reshma Tuladhar, Bhupendra Lama, Bijendra Shrestha, Jetsada Posom, Panmanas Sirisomboon, Bim Prasad Shrestha

14:05 ~ 14:20 **Strategies for the content determination of capsaicin and identification of the adulterated pepper powder using a hand-held near-infrared spectrometer**

Sijun Wu, Wenlong Li

14:20 ~ 14:35 **Convolutional Neural Network Prediction of the Anthocyanin Content in Purple Maize Using NIR Hyperspectral Imaging**

Nam-Wook Kim, Ju-Kyong Lee, and Changyeun Mo

14:35 ~ 14:50 Break

14:50 ~ 15:15 Company presentation

## **Session 2(Hyperspectral imaging)**

Session chair: Prof. Hoonsoo Lee

15:15 ~ 16:00 **ANS2022 General meeting**

16:00 ~ 16:20 **Application of hyperspectral imaging for quality measurement of agricultural materials**

Byoung-Kwan Cho (Keynote speaker)

16:20 ~ 16:35 **Sugar content imaging of strawberries using a near-infrared hyperspectral camera and laser displacement meter**

Hayato Seki, Haruko Murakami, Te Ma, Li Bin, Satoru Tsuchikawa, Tetsuya Inagaki

16:35 ~ 16:50 **Nondestructive detection of dehusked young coconut meat thickness using push-broom near-infrared hyperspectral imaging system**

Dharell B. Siano, Anupun Terdwongworakul

16:50 ~ 17:05 **Hyperspectral Infrared Imaging for Non-destructive measurement of Chemical Composition for Soybean Seed**

Rizkiana Aulia, Wang-Hee Lee, Kyung-Hwan Kim, Jeong-Ho Baek, Byoung-Kwan Cho

17:05 ~ 17:20 **Geometrical influence correction of apple's near infrared hyperspectral images for early bruise detection**

Bin Li, Leshang Bai, Te Ma, Tetsuya Inagaki, Satoru Tsuchikawa

17:20 ~ 17:35 **Hyperspectral short wave near infrared (SWIR) imaging for nondestructive measurement of chemical composition of beef**

Juntae Kim, Yun-kil Kwon, Byoung-Kwan Cho

17:35 ~ 17:50 **Discrimination of weedy rice using near infrared, spectroscopy (NIR) and hyperspectral NIR image combined with modified self-organizing maps (SOMs)**

Sureerat Makmuang, Sanong Ekgasit, Kanet Wongravee

17:50 ~ 18:05 **Learning hyperspectral image combined 3D-CNN and data augmentation for bee mite classification**

Hong-Gu Lee, Min-Jee Kim, Su-bae Kim, Changyeun Mo

# Wednesday November 30

- 11:30 ~ 12:00 **Aspects to increase the robustness of NIRs prediction models**  
Plenary speaker(Prof. Dra. Lola Pérez-Marín)
- Session 3(Basic science and chemometrics)**  
Session chair: Prof. Hoeil Chung
- 12:00 ~ 12:20 **Extended molar absorption coefficients of confined water in reverse micelles**  
Akifumi Ikehata (Keynote speaker), Ken Nakamura, and Yukihiro Ozaki
- 12:20 ~ 12:40 **Chemometric studies for analyzing temperature-dependent near-infrared spectra**  
Xueguang Shao (Keynote speaker), Chaoshu Duan, Wensheng Cai
- 12:40 ~ 12:55 **Upgrading the model performance for rapid prediction of the ash content of biomass using NIR spectroscopy**  
Bijendra Shrestha, Jetsada Posom, Bim Prasad Shrestha, Panmanas Sirisomboon
- 12:55 ~ 13:10 **Application of a portable Near Infrared spectrometer for estimation of theaflavin in black tea**  
Dilip Sing, Santanu Sabhapondit, Rajib Bandyopadhyay and Ajanto Kumar Hazarika
- 13:10 ~ 13:25 **Application of Surface-Enhanced Raman Scattering (SERS) Au Nano gap 2 substrates for Carbaryl pesticide assessment in food matrices in conjunction with Chemometrics**  
Rahul Joshi, Byoung-Kwan Cho
- 13:25 ~ 13:40 **Numerical analysis of near-infrared light scattering characteristics by molecular dynamics and electromagnetic wave theory**  
Hyeonwoo Na, Hiroyuki Fujii, Kazumichi Kobayashi, Masao Watanabe
- 13:40 ~ 13:55 **Spectral acquisition precision and standard error of laboratory of VIS and NIR spectroscopy in evaluation of crosslink density of natural rubber prevulcanized latex**  
Suntaree Dachapan, Chin Hock Lim, Suppakit Howvimanporn, Kittisak Phetpan, Jiraporn Sripinyowanich Jongyingcharoen, Thanaphol Salabsee, Adisak Kongwaree, Panmanas Sirisomboon, Jetsada Posom
- 13:55 ~ 14:10 **Firefly algorithm combined with extreme learning machine for spectral quantitative analysis of complex samples**  
Prisca Mpango, Hao Sun, Shuyu Wang, Xihui Bian
- 14:10 ~ 14:20 Break
- 14:20 ~ 14:45 Company presentation

## Session 4(Advanced technology and pharmaceutical application)

Session chair: Prof. Changyeun Mo

- 14:45 ~ 15:05      **Chemometrics and deep learning models for classification of spectroscopic data with application to detection of colon polyps**  
Ying Zhu (Keynote speaker)
- 15:05 ~ 15:25      **A portable moisture content meter using near infrared spectroscopy with real-time data report on a smartphone**  
Sirinad Noypitak(Keynote speaker), Sutida Ruangkhasap, Anupun Terdwongworakul, Naridol Paunrat, Amornrit Puttipipatkajorn, Amorndej Puttipipatkajorn
- 15:25 ~ 15:40      **Investigation on influence of tissue oxygen saturation Sto 2 using near infrared spectroscopy for prognosis of dengue hemorrhagic fever in Indian children**  
Neelamegam D and P. Bhuvaneswari
- 15:40 ~ 15:55      **Study on the dissolution profiles prediction of sinomenine hydrochloride sustained-release tablets using near-infrared spectroscopy**  
Long Wang, Wenlong Li
- 15:55 ~ 16:10      **1D-CNN model development for soluble solids content evaluation of apple using Vis/NIR spectroscopy**  
Doo-Jin Song, Seung-Woo Chun, Soo-Hwan Park, Min-Jee Kim, and Changyeun Mo
- 16:10 ~ 16:25      **A strategy for herbal medicine quality evaluation based on end-to-end signal multivariate transformation: from NIR spectroscopy to chromatography**  
Tongcan Cui, Wenlong Li
- 16:25 ~ 16:40      **Exploring for NIR quantification of captured polyethylene particles in perfluorohexane**  
Yunjung Kim, Hoeil Chung
- 16:40 ~ 16:55      **Wavelength-dependent interference effects on the light scattering in fat emulsions using time-dependent diffuse reflectance measurements**  
Yuki Inoue, Hiroyuki Fujii, Goro Nishimura, Kazumichi Kobayashi, Masao Watanabe
- 16:55 ~ 17:10      **NIR spectroscopic identification of gallbladder cancer through analysis of human bile**  
Eunjin Jang, Woosuk Sohng, Young Mee Jung and Hoeil Chung
- 17:10 ~ 17:25      **Deep learning algorithm development for early detection of *botrytis cinerea* infected strawberry fruit using fluorescence hyperspectral imaging**  
Seung-Woo Chun, Doo-Jin Soing, Kwang-Ho Lee, Min-Jee Kim, Kyoung-Su Kim, Changyeun Mo
- 17:25 ~ 17:40      **Closing Remarks and ANS2024(India)**  
Prof. Hoeil Chung

# POSTER

- P1 **Monitoring moisture content of house crickets during the drying process using near-infrared spectroscopy**  
Pitiporn Ritthiruangdej, Arisara Hiriotappa, Patcharanun Suksangpanomrung
- P2 **Starch detection in fresh banana fruit with 785 nm Raman system**  
Shusaku Nakajima, Shinichiro Kuroki, Akifumi Ikehata
- P3 **Fluorescence Hyperspectral Imaging for Early Detection of Heat-stressed Ginseng Plants**  
Mohammad Akbar Faqeerzada, Eunsoo Park, and Byoung-Kwan Cho
- P4 **The effect of calibration transfer from a master to a slave instrument to predict water content in biodiesel**  
Krairuek Ngowsuwan, Sumaporn Kasemsumran, Sunee Jungtheerapanich and Kanyarat Nitee
- P5 **Simulation study for interpretation of PCA loading spectra**  
Takuma Genkawa, Akifumi Ikehata
- P6 **Deep learning for quantitative analysis of near-infrared spectra**  
Chaoshu Duan, Xuyang Liu, Wensheng Cai, Xueguang Shao
- P7 **SupAE for Extracting Category-related Information from Hyperspectral Images**  
Xuyang Liu, Chaoshu Duan, Wensheng Cai, Xueguang Shao
- P8 **Comparison of benchtop and handheld NIR devices to determine fruit wine fermenting parameters**  
Sumaporn Kasemsumran, Antika Boondaeng, Kraireuk Ngowsuwan, Sunee Jungtheerapanich, Bussaba Punyachon, Sirimada Mongkolwit, Kanyarat Nitee, Waraporn Apiwatanapiwat, Phornphimon Janchai, Pilanee Vaithanomsat
- P9 **Variable moving window-standard normal variable method for NIR spectroscopy**  
Kunping Chi, Jiarui Lin, Junjie Chen, Yiming Chen, Min Chen, Tao Pan
- P10 **A model compensation fusion method for NIR spectral pattern recognition**  
Tao Pan\*, Lu Yuan, Niangen Ye, Sheng Zhong
- P11 **Quantitative determination of protein in a swiftlet nest by using near-infrared spectroscopy**  
Sunee Jungtheerapanich, Kraireuk Ngowsuwan, Bussaba Punyachon, Sirimada Mongkolwit, Kanyarat Nitee, Sumaporn Kasemsumran

- P12      **Application of Optical Photothermal Infrared Spectroscopy (O-PTIR) for the Identification of the Species of Rice Seed Infectious Bacteria**  
Haeun Kim, Ye-Na Kim, Byoung-Kwan Cho
- P13      **Quantitative and qualitative prediction of microplastics using micro-hyperspectral imaging**  
Ye-Na Kim, Haeun Kim, Byoung-Kwan Cho
- P14      **Measurements of alcohol content of liquors in bottles using near-infrared spectroscopy**  
Sakiko Matsuura,<sup>1\*</sup> Norio Yoshimura,<sup>2</sup> Masao Takayanagi<sup>2</sup>
- P15      **Diagnose of herbicide damage on soybean using hyperspectral imaging**  
Hongseok Lee, Hyenchung Chun, Jinki Park, Mihye Jeong, Seongtae
- P16      **Development in NIR Research in India**  
Jha SN, Jaiswal P and Naraiah, K
- P17      **Estimation of nitrogen content on topsoil using NIR hyperspectral reflectance based on machine and deep learning models**  
Min-Jee Kim, Jae-Eun Lee, Kyoung Jae Lim, Changyeun Mo
- P18      **Early detection of abiotic stress of strawberry leaves using variable-length time series hyperspectral imaging**  
Hangi Kim, Seung Hyun Lee, Taehyun Kim, Byoung-Kwan Cho
- P19      **Geometric evaluation of the stress relaxation process of wood based on the differential form**  
Takaaki Fujimoto
- P20      **NIR imaging through FTIR concentration regression models of aqueous acid-base reactions**  
Gia Ginelle Carandang, Takumi Sakashita, Naoto Kakuta
- P21      **Experimental investigation of LED module for VIS-NIR spectroscopy**  
Hoyoung Lee, Doo-Jin Song, Seung-Woo Chun, and Changyeun Mo
- P22      **Quantification of microplastics in sea-salt using near-infrared hyperspectral imaging technique**  
Hwanjo Jeong, Hoonsoo Lee
- P23      **Development of prediction model of drought-stress for Chinese cabbage using hyperspectral imaging technique**  
Seunghyun Im, Hoonsoo Lee
- P24      **Real-time measurement and analysis of metabolic reactions using phase** 73

**relationships between metabolites**

Miho Sesumi, Akifumi Ikehata

- P25 **Study on gelatinization of starches and amylose-amylopectin mixture by NIR and IR spectroscopy**

Norihisa Katayama and Mayumi Kuwano

- P26 **Nondestructive identification of benzoyl peroxide particles in wheat flour using SWIR hyperspectral imaging**

Ji-won Choi, Geonwoo Kim

- P27 **Study on the Dissolution Mechanism of Cellulose in NMMO Aqueous Solution by NIR**

Rong Zhu, Zhipeng Li, Chunfeng Sun, Hongfu Yuan, Xiaoyu Li

- P28 **A study on the method of measuring microplastic standard samples using FT-IR imaging**

Eunsoo Park, Jeehwa Hong, Gwanghee Lee, Sunghie Hong