

# **The 10th Annual Ambient Pressure X-ray Photoelectron Spectroscopy Workshop**

**December 5-8**

**CHANG YUNG-FA FOUNDATION (CYFF)**

**International Convention Center**

**Room 1001, 10F**

**Taipei, Taiwan**

## Schedule at a Glance

Time	Tue. (Dec. 5)	Wed. (Dec. 6)	Thu. (Dec. 7)	Fri. (Dec. 8)	
	Chair: Y.- W. Yang	Chair: B. S. Mun	Chair: C.- H. Chen		
9:00- 9:30	Registration	<b>Hiroshi Kondoh</b>	<b>R. Weatherup</b>	Transfer to NSRRC (8:30- 10:10)	
9:30- 9:50		C.- H. Chuang	G. Held		
9:50- 10:10		F. Garcia-Martinez	L. Cardenas	Group Photo 2	
10:10- 10:20		Dir. C.- H. Hsu	S. Mauri	M. Scardamaglia	Coffee break
10:20- 10:30			Coffee break	Coffee break	Chair: G. Held
10:30- 10:50	<b>Anders Nilsson</b>	Chair: J. Knudsen	Chair: B.- H. Liu	<b>Edman Tsang</b>	
10:50- 11:20		<b>Meng-Fan Luo</b>	<b>Slavomir Nemsak</b>		
11:20- 11:40	J. Knudsen	A. Thissen	M. Seo	Y. Takagi	
11:40- 12:00	M. Blum	F. Mirabella	P. Amann	APXPS 2024	
12:00- 13:30	Lunch	Lunch	Lunch	Lunch	
	Chair: R. Weatherup	Chair: C.- H. Chuang			
13:30- 14:00	<b>Rik Mom</b>	<b>I. Waluyo</b>	Group Photo 1	NSRRC Tour	
14:00- 14:20	L. Braglia	C.- M. Yang	Excursion		
14:20- 14:40	A. Ghafari	H. J. Kim			
14:40- 15:00	R. Toyoshima	M. Moritz			
15:00- 15:20	A. Beniwal	M. Guo			
15:20- 15:40	Coffee break	Coffee break			
	Chair: C.- H. Wang	Chair: I. Waluyo		Back to Taipei	
15:40- 16:10	<b>Heng-Liang Wu</b>	<b>B. A. J. Lechner</b>			
16:10- 16:30	B. Jeong	T. Wada			
16:30- 16:50	M. Günthel	A. Knop-Gericke			
16:50- 17:10	P. Lömker	Y. Ye			
17:10- 17:30		C. Baeumer			
		J. Knudsen			
17:30- 20:00		Poster Session	Conference Dinner (18:00- 20:00)		

# Scientific Program (December 5)

**December 5 (Tuesday)**

**Place: Rm.1001, CYFF**

09:00 Registration

Session Chair: Yaw-Wen Yang

10:20 **Opening Remarks**

*Chia-Hung Hsu, Director, NSRRC*

10:30 Plenary **Ambient XPS Studies of CO/CO<sub>2</sub> and N<sub>2</sub> Catalytic Reduction Reactions**

*Anders Nilsson, Stockholm University, Sweden*

11:20 **Probing minority sites and their activity using chemical perturbations and Fast Fourier Transformed Ambient Pressure X-ray Photoelectron Spectroscopy**

*Jan Knudsen, NanoLund / MAX IV laboratory, Sweden*

11:40 **CO<sub>2</sub> Absorption Processes at the Liquid-Vapor Interface of Aqueous Amine Solutions**

*Monika Blum, Lawrence Berkeley National Lab, USA*

12:00 Lunch

Session Chair: Robert Weatherup

13:30 Invited **The Chemistry of Ions at the Electrode-Electrolyte Interface**

*Rik Mom, Leiden University, The Netherlands*

14:00 **Investigation of the unsaturated metal surface sites in MOFs: An in situ/operando ambient pressure NEXAFS study**

*Luca Braglia, Area Science Park, Italy*

14:20 **Electronic structure of NiO<sub>x</sub> by in situ spectro-electrochemistry**

*Aliakbar Ghafari, Max Planck Institute for Chemical Energy Conversion, Germany*

14:40 **In-situ/operando APXPS studies for hydrogen related surface functional materials**

*Ryo Toyoshima, Keio University, Japan*

15:00 **Potential Synergism Between Sub-nanometer Pd-Clusters and Adjacent NiO<sub>x</sub> Domains Underneath for High-Performance CO<sub>2</sub> Methanation: An Ambient Pressure X-Ray Photoelectron Spectroscopy Study**

*Amisha Beniwal, National Tsing Hua University, Taiwan*

15:20 **Coffee Break**

- 15:40 Invited **In situ spectroscopy studies of photocatalytic and electrocatalytic CO<sub>2</sub> reduction reaction**  
*Heng-Liang Wu, National Taiwan University, Taiwan*
- 16:10 **Probing Catalytic Active Sites for Electrochemical Oxygen Reduction: In situ NAP-XPS and NAP–SXAS Analysis of Gas Adsorption on Fe-N-C**  
*Beomgyun Jeong, Korea Basic Science Institute, Korea*
- 16:30 **Applied NAP-XPS on Sensitive Materials**  
*Michael Günthel, Fraunhofer Institute for Solar Energy Systems, Germany*
- 16:50 **Comparing Fischer-Tropsch synthesis at 1bar on flat and stepped Co Single Crystals by operando with AP-XPS**  
*Patrick Lömker, XsoLaS / Stockholm University, Sweden*

# Scientific Program (December 6)

December 6 (Wednesday)

Place: Rm.1001, CYFF

Session Chair: Bongjin Simon Mun

09:00 Invited **In Situ Observations for Catalytic Surfaces with Surface Spectroscopy: AP-XPS and Related Techniques**  
*Hiroshi Kondoh, Keio University, Japan*

09:30 **Water coupling in reduced graphene oxide enhanced by the oxidation functional groups**  
*Cheng-Hao Chuang, Tamkang University, Taiwan*

09:50 **Chemistry and structure of Rh stepped surfaces during NO dissociation at ambient pressures**  
*Fernando Garcia Martinez, DESY, Germany*

10:10 **Hydrogen Production Mechanism in Low-Temperature Methanol Decomposition Catalyzed by Ni<sub>3</sub>Sn<sub>4</sub> Intermetallic Compound: A Combined Operando and Density Functional Theory Investigation**  
*Silvia Mauri, CNR-IOM, Italy*

10:30 **Coffee Break**

Session Chair: Jan Knudsen

10:50 Invited **Catalysis model-system studies under near-ambient-pressure conditions: decomposition of methanol-d<sub>4</sub> on Rh nanoclusters supported by thin film Al<sub>2</sub>O<sub>3</sub>/NiAl(100)**  
*Meng-Fan Luo, National Central University, Taiwan*

11:20 **Photoemission During Plasma Exposure (Plasma XPS) on the Example of Ru Model Catalyst Surfaces**  
*Roland Bliem, Advanced Research Center for Nanolithography, The Netherlands*

11:40 **Enriching Photoelectron Spectroscopy Instrumentation: New Developments in NAP-XPS Analysis**  
*Francesca Mirabella, SPECS Surface Nano Analysis GmbH*

12:00 **Lunch**

Session Chair: Cheng-Hao Chuang

13:30 Invited **The effect of Rh dopants in enhancing the surface reactivity of copper and copper oxide in oxidation and hydrogenation reactions**  
*Iradwikanari Waluyo, National Synchrotron Light Source II, USA*

14:00 **Spectroscopic Studies on Silver-Loaded Defect Pyrochlore Tantalate Nanocrystals for Photocatalytic Water Splitting into Hydrogen and Hydrogen Peroxide**  
*Chia-Min Yang, National Tsing Hua University, Taiwan*

- 14:20                    **Near ambient pressure x-ray photoemission spectroscopy (APXPS) analysis of VSe<sub>2</sub>-xO<sub>x</sub> under water vapor environment**  
*Hyuk Jin Kim, University of Seoul, Korea*
- 14:40                    **The Active Site in Liquid Alloy GaPt Catalysts – a NAPXPS Study**  
*Michael Moritz, FAU Erlangen-Nürnberg, Germany*
- 15:00                    **Evolution of active oxygen species over silver foil in ethylene epoxidation revealed by ambient pressure X-ray photoelectron spectroscopy**  
*Man Guo, Paul Scherrer Institute, Switzerland*
- 15:20                    **Coffee Break**
- Session Chair: Iradwikanari Waluyo*
- 15:40    Invited    **Support and environment effects in particle encapsulation on reducible oxides**  
online                    *Barbara A.J. Lechner, Technical University of Munich, Germany*
- 16:10                    **Current status of the development of ambient pressure X-ray photoelectron spectroscopy system at NanoTerasu BL08U**  
*Tetsuyta Wada, The university of Tokyo, Japan*
- 16:30                    **Ambient-Pressure XPS Facilities at BESSY: ISIS, BEIChem, CAT@EMIL and ELISA: Status and Perspectives**  
*Axel Knop-Gericke, The Fritz Haber Institute of the Max Planck Society*
- 16:45                    **An APXPS beamline for solid/gas and solid/liquid interface studies at Hefei Advanced Light Facility**  
*Yifan Ye, NSRL, University of Science and Technology of China*
- 17:00                    **Time-Resolved APXPS with Chemical Potential Perturbations: Recent Developments at the MAX IV Laboratory**  
*Jan Knudsen, Dept. of Physics/ Max IV Lab, Lund University*
- 17:15                    **Future tri-color operando APXPS user facility at the University of Twente**  
*Chris Baeumer, Inorganic Materials Science, University of Twente*
- 17:30                    **Poster Session**

# Scientific Program (December 7)

**December 7 (Thursday)**

**Place: Rm.1001, CYFF**

Session Chair: Chia-Hao Chen

09:00     Invited     **Revealing Reactions at Electrochemical and Catalytic Interfaces: Membrane-based Operando Approaches**  
*Robert Weatherup, University of Oxford, UK*

09:30                    **Operando XPS Studies of size-selected Pd and Pd-Pt nanoparticles on “spectroscopy friendly” Alumina Support**  
*Georg Held, Diamond Light Source, UK*

09:50                    **Membrane cells for in situ XPS characterization in a standard UHV-XPS instrument**  
*Luis Cardenas, Université Claude Bernard Lyon 1, France*

10:10                    **Simultaneous APXPS and electrical response of WS<sub>2</sub> gas sensors towards the exposure to toxic gases to explore the sensing mechanism**  
*Mattia Scardamaglia, MAX IV Laboratory, Sweden*

10:30                    **Coffee Break**

Session Chair: Bo-Hong Liu

10:50     Invited     **Correlating Chemical and Morphological Transformations through Multi-Modal X-ray Characterization**  
*Slavomir Nemsak, Advanced Light Source, USA*

11:20                    **Monitoring the influence of solid surface potential on gas phase using AP-XPS**  
*Minsik Seo, Gwangju Institute of Science and Technology, Korea*

11:40                    **Latest developments in APXPS by Scienta Omicron**  
*Peter Amann, Scienta Omicron*

12:00                    **Lunch**

13:30                    **Excursion**

17:30                    **Banquet**

# Scientific Program (December 8)

*December 8 (Friday)*

*Place: Rm.D260, NSRRC*

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08:30                    **Transfer to NSRRC (Hsinchu)**

10:00                    **Group Photo**

10:10                    **Coffee Break**

*Session Chair: Georg Held*

10:30    Plenary    **Catalyst Surface Characterization by APXPS**

*Edman Tsang, University of Oxford, UK*

11:20                    **Development of the ambient pressure hard X-ray photoelectron spectroscopy in BL46XU at SPring-8**

*Yasumasa Takagi, Japan Synchrotron Radiation Research Institute, Japan*

11:40                    **APXPS 2024**

12:00                    **Lunch**

13:30                    **Taiwan Photon Source site tour**

15:00                    **Back to Taipei**