



8th ICNaB

***THE 8th INTERNATIONAL CONFERENCE
ON SODIUM BATTERIES***

September 21-24, 2023

Liyang, China

CONTENTS

I.	ABOUT ICNaB	2
II.	ORGANIZATION	3
III.	GENERAL INFORMATION	4
IV.	PLENARY SESSION.....	7
V.	POSTER SESSION.....	15
VI.	SPONSORSHIP.....	19
VII.	MEDIA ACKNOWLEDGEMENTS.....	33

I. ABOUT ICNaB

Since 2013, series of the International Conference on Sodium Batteries (ICNaB) have witnessed the rapid development of sodium battery technologies and the booming growth of relevant industries in the past decade. With great pleasure, we organize the 8th International Conference on Sodium Batteries (ICNaB 2023) on **September 21-24, 2023** at the Yangtze River Delta Physics Research Center, in **Liyang City (Jiangsu Province, China)**. Its spirit continues the momentum initiated in the first seven sodium battery conferences held worldwide (Spain 2013, USA 2015, Australia 2016, Japan 2017, France 2018, USA 2019, Germany 2022). The annual gathering provides an excellent opportunity to assess and communicate the current understanding and benchmark for cutting-edge science in this fast-developing field. We believe having you attend this conference will strengthen the technology focus and contribute to the collegial atmosphere of the meeting.

We sincerely welcome you to the 8th International Conference on Sodium Batteries, on September 21–24, at Yangtze River Delta Physics Research Center, Liyang, China.

II. ORGANIZATION

Organizer

Yangtze River Delta Physics Research Center

Co-organizer

Institute of Physics, Chinese Academy of Sciences

Chair of ICNaB-2023 Organizing Committee

Prof. Liquan Chen

Academician of Chinese Academy of Engineering

Institute of Physics, Chinese Academy of Sciences

Yangtze River Delta Physics Research Center

Prof. Yong-Sheng Hu

Director of Key Laboratory for Renewable Energy

Institute of Physics, Chinese Academy of Sciences

Yangtze River Delta Physics Research Center

International Scientific Committee

Teófilo Rojo, University of the Basque
Country UPV/EHU

Maria Forsyth, Deakin University

Xiaolin Li, Pacific Northwest
National Laboratory

Christopher Johnson, Argonne
National Laboratory

Laurence Croguennec, ICMCB-CNRS,
Université de Bordeaux

Stefano Passerini, Karlsruher Institut
für Technologie

Sinichi Komaba, Tokyo University of
Science

Christian Masquelier, Université de
Picardie Jules Verne

Margret Wohlfahrt-Mehren, Zentrum
für Sonnenenergie- und Wasserstoff-
Forschung Baden-Württemberg

III. GENERAL INFORMATION



Hotels



**Grand New Century Hotel,
Liyang**



**Howard Johnson
Tianmu Lake Plaza, Liyang**

IOPLY



Transportation



Nanjing Lukou International

Airport ➡ Hotels

About 50 minutes drive to Grand New Century
Hotel/Howard Johnson Tianmu Lake Plaza
QR code for airport bus ticket purchase



Liyang Railway Station ➡ Hotels

About 15 minutes drive to Grand New Century Hotel/
Howard Johnson Tianmu Lake Plaza

Venue Map



→ From Grand New Century Hotel to International Exchange Center (2F)

Conference Schedule

DAY September 21 (Thursday)	DAY September 22 (Friday)	DAY September 23 (Saturday)	DAY September 24 (Sunday)
Registration 9:00—21:00	Session I 8:30—12:10	Session III 8:30—12:10	Session V 8:30—12:30
	Buffet Lunch 12:10—14:00	Buffet Lunch 12:10—14:00	Buffet Lunch 12:30—14:00
	Session II 14:00—18:00	Session IV 14:00—18:00	Company Visiting 14:00—18:00
Buffet Dinner 18:30—20:00	Banquet 18:30—20:00	Buffet Dinner 18:30—20:00	

- Banquet: Howard Johnson Tianmu Lake Plaza, Liyang



Volunteers

Volunteers will wear a blue T-shirt. Please contact volunteers for help during the conference.



Contact Persons:

- Registration, Dining, Accommodation: Yunfei Huang, 13861208344.
- Transportation, Poster Session: Yun Shen, 15189726890.
- Payment, Invoice: Shubin Cao, 15105191169.



Poster

- The Poster Session will be on September 22 - September 24.
- Posters should be brought directly to the poster area (International Exchange Center 2F) after 9:00 am, September 21. Each poster has been assigned a number (See Page 17 for your poster number) and an individual poster board. Posters should be affixed to the corresponding numbered boards with glue which will be available in the poster area.
- The session conveners will choose the top ten posters during. The recipients of the Best Poster Awards, which carry a cash prize of CNY 1500, will be announced and presented at the Closing Ceremony on September 24. We wish you all the best!
- We are looking forward to your participation and support.

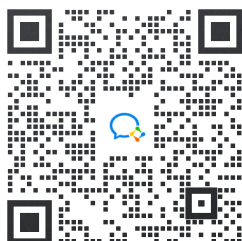


WiFi:

- Username: IOPLY-Guest (No Password)



ICNaB 2023 WeChat Group



ICNaB 2023 Abstract of the Report



IV. PLENARY SESSION

Opening Ceremony

8:30 - 8:55	<p>Chair: Yong-Sheng Hu</p> <p>Institute of Physics, Chinese Academy of Sciences</p> <p>Prof. Hong Li</p> <p>Institute of Physics, Chinese Academy of Sciences</p> <p>Yangtze River Delta Physics Research Center</p> <p>Prof. Claude Delmas</p> <p>ICMCB-CNRS</p> <p>Université de Bordeaux</p> <p>Prof. Liquan Chen</p> <p>Academician of CAE Member</p> <p>Institute of Physics, Chinese Academy of Sciences</p>
-------------	--

Session I: Cathode Materials 1

	<p>Chair: Maria Forsyth</p>
<p>8:55 - 9:20</p> <p>IN-1</p>	<p>Shinichi Komaba</p> <p>Tokyo University of Science</p> <p>Layered Na_xMnO₂ oxides and effect of scandium doping</p>
<p>9:20 - 9:45</p> <p>IN-2</p>	<p>Zhaoyin Wen</p> <p>Shanghai Institute of Ceramics, Chinese Academy of Sciences</p> <p>Improvement of cathode performance by composite strategies</p>
<p>9:45 - 10:10</p> <p>IN-3</p>	<p>Feng Pan</p> <p>Peking University Shenzhen Graduate School</p> <p>Exploration of structural chemistry in Na-ion batteries</p>
<p>Coffee break 10:10-10:30</p>	

Session I: Cathode Materials 2**Chair: Zhaoyin Wen**

10:30 - 10:55 IN-4	Yong Yang Xiamen University Electro-chemical stability and reversibility of Mn-based cathode materials for Na-ion batteries
10:55 - 11:20 IN-5	Zi-Feng Ma Shanghai Jiao Tong University Engineering characteristics of green manufacturing process of cathode materials for sodium-ion batteries
11:20 - 11:45 IN-6	Xin Li Harvard University Asymmetric structure evolution in layered Na metal oxides
11:45 - 12:10 IN-7	Seung-Taek Myung Sejong University Recent progress in high-capacity sodium transition metal oxides with oxygen redox chemistry
Lunch 12:10-14:00	

Session I: Cathode Materials 3**Chair: Jianyu Huang**

14:00 - 14:25 IN-8	Margret Wohlfahrt-Mehren Zentrum für Sonnenenergie-und Wasserstoff-Forschung Baden-Württemberg (ZSW) Layered $\text{Na}_x\text{Mn}_{3/4}\text{Ni}_{1/4}\text{O}_2$ cathode materials for sodium-ion batteries
14:25 - 14:50 IN-9	Ya-Xia Yin Xinjiang University Layered oxide cathode materials towards high-performance Na-ion batteries
14:50 - 15:15 IN-10	Qing Wang Collège de France/Empa - Swiss Federal Laboratories for Materials Science and Technology Unlocking anionic redox activity in O3-type sodium 3d layered oxides through Li substitution

15:15 - 15:40 IN-11	<p>Jongsoon Kim</p> <p>Sungkyunkwan University</p> <p>Strategic approaches to enhance the structural stability of layered-type cathodes for high-performance Na-ion batteries</p>
15:40 - 16:05 IN-12	<p>Kei Kubota</p> <p>National Institute for Materials Science</p> <p>Multi-metal substitution with controlled in-plane metal ordering in P2-type $\text{Na}_{2/3}\text{Ni}_{1/3}\text{Mn}_{2/3}\text{O}_2$ for superior cycle stability</p>
Coffee break 16:05-16:25	

Session I: Cathode Materials 4

Chair: Haoshen Zhou	
16:25 - 16:50 IN-13	<p>Yan Yu</p> <p>University of Science and Technology of China</p> <p>Improving the rate capability and reversable capacity of NASICON cathode by using porous carbon network and anion doping</p>
16:50 - 17:15 IN-14	<p>Naoaki Yabuuchi</p> <p>Yokohama National University</p> <p>Atmospheric stability of layered oxides for Na battery applications</p>
17:15 - 17:40 IN-15	<p>A. Robert Armstrong</p> <p>University of St Andrews</p> <p>Composite layered oxides for sodium-ion batteries</p>
17:40 - 18:05 IN-16	<p>Reza Younesi</p> <p>Uppsala University</p> <p>Altris prussian blue cathode progress on commercialization of Na-ion batteries</p>
18:05 - 18:30 IN-17	<p>Michael Metzger</p> <p>Dalhousie University</p> <p>Approaches to control air stability and cycling performance of layered oxide positive electrode materials for sodium-ion batteries</p>
Banquet 18:30	

Session I: Cathode Materials 5

Chair: Maria-Magdalena Titirici

<p>8:30 - 8:55</p> <p>IN-18</p>	<p>Laurence Croguennec</p> <p>ICMCB-CNRS, Universite de Bordeaux</p> <p>Reaching the $V_2(PO_4)_3$ composition by Na^+ extraction from new $Na_xV_2(PO_4)_3$</p> <p>$(1 < x < 3)$ positive electrode materials</p>
<p>8:55 - 9:20</p> <p>IN-19</p>	<p>Evgeny V. Antipov</p> <p>Lomonosov Moscow State University</p> <p>Novel phosphates and fluoride-phosphates as electrode materials for Na-ion batteries</p>
<p>9:20 - 9:45</p> <p>IN-20</p>	<p>Yuliang Cao</p> <p>Wuhan University</p> <p>Polyanionic compounds as cathode materials for sodium-ion batteries</p>
<p>9:45 - 10:10</p> <p>IN-21</p>	<p>Junmei Zhao</p> <p>Institute of Process Engineering, Chinese Academy of Sciences</p> <p>Understanding the voltage hysteresis in Mn-rich NASICON-type compounds and some improved strategies</p>
<p>10:10 - 10:35</p> <p>IN-22</p>	<p>Qiong Zheng</p> <p>Dalian Institute of Chemical Physics, Chinese Academy of Sciences</p> <p>Energy storage-driven phosphate-based sodium ion batteries</p>
<p>10:35 - 10:47</p> <p>OR-1</p>	<p>Miao Liu</p> <p>Institute of Physics, Chinese Academy of Sciences</p> <p>Data-driven screening of promising sodium-ion battery cathodes</p>
<p>Coffee break 10:47-11:07</p>	

Session II: Electrolyte Materials

Chair: Atsuo Yamada

11:07 - 11:32 IN-23	Byoungwoo Kang POSTECH Solid electrolyte based Na-“ambient air” by using reversible electrochemical reaction
11:32 - 11:57 IN-24	Huilin Pan Zhejiang University Electrolyte structure design enables high-performance Na-ion batteries
11:57 - 12:09 OR-2	Zhizhen Zhang Sun Yat-sen University The exploitation of paddle-wheel mechanism for the design of Na-ion conductors
Lunch 12:10-14:00	

Session III: Anode Materials 1

Chair: Evgeny V. Antipov

14:00 - 14:25 IN-25	Yunhui Huang Huazhong University of Science and Technology Optimizing the electrode materials for high-performance sodium-ion batteries
14:25 - 14:50 IN-26	Maria-Magdalena Titirici Imperial College London Sustainable and fast charging hard carbon anodes for Na-ion batteries at scale
14:50 - 15:15 IN-27	Quanhong Yang Tianjin University Sieving carbons promise high capacity anodes for sodium batteries
15:15 - 15:40 IN-28	Montse Casas-Cabanas CIC EnergiGUNE Structural and microstructural descriptors in carbon based anode materials
15:40 - 15:52 OR-3	Longjie Zhou LionGo (Changzhou) New Energy Co., Ltd. Research and development of electrolytes for sodium-ion batteries
Coffee break 15:52-16:00	

Session III: Anode Materials 2

Chair: Mathieu Morcrette

16:00 - 16:25 IN-29	<p>Atsuo Yamada</p> <p>The University of Tokyo</p> <p>Systematic X-ray scattering and computational studies on Na storage into hard carbon</p>
16:25 - 16:50 IN-30	<p>Nolene Byrne</p> <p>Deakin University</p> <p>Hard carbons from waste</p>
16:50 - 17:15 IN-31	<p>Philipp Adelhelm</p> <p>Humboldt-Universität zu Berlin</p> <p>Tuning layered electrode materials for Na⁺ storage by doping and solvent co-intercalation</p>
17:15 - 17:40 IN-32	<p>Bin Xu</p> <p>Beijing University of Chemical Technology</p> <p>Hard carbon materials for sodium-ion batteries</p>
17:40 - 18:05 IN-33	<p>Hui (Claire) Xiong</p> <p>Boise State University</p> <p>Heterostructure engineering in electrode materials for sodium ion batteries</p>
18:05 - 18:17 OR-4	<p>Yaozu Wang</p> <p>Institute of Metal Research, Chinese Academy of Sciences</p> <p>Competitive coordination of sodium ions for sodium metal battery</p>
Dinner 18:30	

Session IV: Materials and Interfaces**Chair: Philipp Adelhelm**

8:30 - 8:55 IN-34	Haoshen Zhou Nanjing University High performance anodes for sodium-ion batteries based on desolvated electrolytes
8:55 - 9:20 IN-35	Qiang Zhang Tsinghua University Data-driven insight into the reductive stability of ion-solvent complexes in working battery electrolytes
9:20 - 9:45 IN-36	Yaxiang Lu Institute of Physics, Chinese Academy of Sciences Materials design and interfaces engineering for high-performance Na-ion batteries
9:45 - 9:57 OR-5	Biwei Xiao General Research Institute for Nonferrous Metals 160 Wh/kg sodium-ion batteries enabled by enhanced high voltage redox reactions
Coffee break 9:57-10:17	

Session V: Characterization and Application**Chair: Laurence Croguennec**

10:17 - 10:42 IN-37	Mathieu Morcrette LRCS-CNRS, TIAMAT Sodium-ion battery for high power automotive applications
10:42 - 11:07 IN-38	Jianyu Huang Yanshan University Electron microscopy studies of sodium batteries

11:07 - 11:32 IN-39	Magdalena Graczyk-Zajac Germany-EnBW Hybrid, grid connected 2 MWh stationary storage containing lithium and sodium-based electrochemical components
11:32 - 11:44 OR-6	Fangfang Chen Deakin University Poly (ionic liquid) electrolytes for solid-state sodium batteries
11:44 - 12:09 IN-40	Yongyao Xia Fudan University Polyanion-type electrode materials for sodium-ion batteries
Closing Ceremony 12:09-12:30	
Lunch 12:30-14:00	
Enterprise Visit 14:00-18:00	

V. POSTER SESSION

No.	Name	Title
S-1	Mikhail Tashlanov	Anion-deficient pyrochlores as a novel class of anode materials for potassium-ion batteries
S-2	Artem Dembitskiy	First principles study of NaGaPO ₄ F solid electrolyte
S-3	Agapkin M. D.	Engineering architectures for tin-carbon composites as anode materials for sodium-ion batteries
S-4	Shraer S.D.	A new polymorph of NaVOPO ₄ as a prospective positive electrode material for Na-ion batteries
S-5	Nikita Luchinin	Metals as anode materials for sodium-ion batteries
S-6	Seongjae Ko	A Na-salt eutectic dihydrate melt for high-voltage aqueous batteries
S-7	Juner Chen	Insitu/Exsitu SSNMR study of the chemical evolution of solid electrolyte interface in sodium metal batteries
S-8	Qiangqiang Meng	DFT study of N, S co-doped graphene anodes for Na-ion storage and diffusion
S-9	Huazhen Liu	Corrosion behavior of Al current collector in ionic liquid electrolytes for sodium-ion batteries
S-10	Shengan Wu	Enhancing Na metal deposition/dissolution efficiency in low N/P ratio sodium metal batteries: insights into electrolytes and temperature effects
S-11	Dr. Christian Baur	Sodium-ion batteries: A promising solution for the lithium supply gap?
S-12	Niu Yuxiang	Ultralow-temperature and high-voltage sodium batteries enabled by the modified electrode electrolyte interfacial chemistry
S-13	Xiaochu Wei	Development of efficient recycling processes to recover materials from spent sodium-ion batteries towards sustainability
S-14	Qing Wang	Planar sodium-nickel chloride batteries with high areal capacity for sustainable energy storage
S-15	Jinkwang Hwang	Enhancing oxidation stability of sodium-ion batteries using solid-state electrolyte via a novel PF ₆ -based ionic liquid
S-16	Tianqi Yang	Low-cost and long-cycle eutectic aqueous sodium ion battery

No.	Name	Title
S-17	Bo Pang	Ag nanoparticles incorporated interlayer enables ultrahigh critical current density for Li ₆ PS ₅ Cl-based dendrite-free all-solid-state lithium batteries
S-18	Zhan Wu	Insight on sodium storage mechanism of wood-derived hard-carbon anodes
S-19	Wessel van Ekeren	Non-flammable liquid electrolytes based on mixtures of ether and phosphate-based for sodium-ion batteries
S-20	Z.V. Bobyleva	Interplay between the morphology, the microstructure and charge storage mechanism of hard carbon anode materials for sodium-ion batteries
S-21	Kodai Moriya	Impact of Sc doping in Na _x MeO ₂ for sodium-ion batteries
S-22	Zakharkin M.V.	Electrochemical properties of NASICON-type electrode materials based on Mn, Ti and V for Na-ion batteries
S-23	Martin H. Petersen	Quest for outperforming cathode materials for Na-ion batteries
S-24	Smobin Vincent	Machine learning-driven atomistic simulations of electrolytes for anode-free Na-ion batteries
S-25	Yaning Liu	Silver nano layer form stable the anode interface for room temperature all-solid-state lithium metal batteries
S-26	Fumiyasu Nozaki	Heterosite FePO ₄ positive electrode material prepared by delithiation of LiFePO ₄ using Cl ₂
S-27	Yuki Fujii	Comparative study of hard carbon electrodes in sodium and lithium cells with diluted electrode method
S-28	Langyuan Wu	Superstructure variation and improved cycling of anion redox active sodium manganese oxides due to doping by iron
S-29	Dan Zhou	A stretchable and self-chargeable sodium-ion thin-film battery for wearable electronics
S-30	Fei Wang	Nitrogen-doped carbon decorated TiO ₂ /Ti ₃ C ₂ T _x MXene composites as anode material for high-performance sodium-ion batteries
S-31	Stanislav S. Fedotov	Phase transformation and charge compensation mechanisms in vanadium-based polyanion Na-ion battery cathodes
S-32	Saaya Sekine	Composition optimization of layered oxides for Na-ion batteries using machine learning and cathode properties of Na-ion batteries
S-33	Masayoshi Shimizu	Na ₂ CO ₃ addition for compensating Na deficiency of P2-Na _{2/3} [Ni _{1/3} Mn _{2/3}]O ₂ electrode in Na batteries

No.	Name	Title
S-34	Mengnan Wang	Lignin-derived mesoporous carbon for sodium-ion batteries: block copolymer soft templating and carbon microstructure analysis
S-35	Lu Yin	Latex binders for high voltage operation of P2- $\text{Na}_{2/3}\text{Ni}_{1/3}\text{Mn}_{2/3}\text{O}_2$ positive electrodes
S-36	Dong Zhou	High flux multifunctional liquid metal jet hard x-ray characterization platform for secondary batteries
S-37	Minfei Fei	Electrolyte design principle to mitigate SEI dissolution for practical Na-ion batteries
S-38	Sarat Alabidun	Probing degradation mechanisms and gas evolution in sodium ion batteries
S-39	ZhenXiao Ling	Improvement of the performance of anionic redox active sodium manganese oxide by coating alumina with ALD
S-40	Yanan Sun	Revealing electrolyte-dependent solvated ion intercalation of layered sulfides for sodium-ion batteries
S-41	Shaoning Zhang	Sodium and lithium storage properties of an amorphized niobium oxide at intermediate temperature using ionic liquid electrolyte
S-42	Bing Wang	Low-cost, high-performance layered oxide cathode for sodium ion batteries
S-43	Dandan Ouyang	Regulating oxygen functional groups of lignin-derived monolith hard carbon for high rate sodium-ion storage
S-44	Kaitian Zheng	Reinvestigating the electrochemical behaviour and Na^+ storage mechanism of hard carbon via three-electrode SIB pouch cell
S-45	Langyuan Wu	Superstructure variation and improved cycling of anion redox active sodium manganese oxides due to doping by iron
S-46	Haihan Zhang	Flexible precursor modulation towards selective heteroatoms doping in hard carbon anode for sodium ion batteries
S-47	Daisuke Igarashi	Design of large-capacity hard carbons based on template synthesis method
S-48	Yichen Huang	Compaction density of hard carbon in sodium ion battery
S-49	Zhenyu Guo	Investigating the superior performance of hard carbon anodes in sodium-ion compared with lithium- and potassium-ion batteries
S-50	Connor Wright	An operando spectro-microscopic study to probe high voltage nanoscale degradation of NVP and electrode cross-talk

No.	Name	Title
S-51	Archana Kaliyaraj Selva Kumar	Elucidating the interphase electrochemistry of biphasic P2/O3 layered oxide material for Na-ion battery
S-52	Feixiang Ding	Tailoring electronic structure to achieve maximum utilization of transition metal redox for high-entropy oxide cathodes
S-53	Jiao Zhang	Research progress on sodium (ion) battery electrolytes at the Institute of Physics, Chinese Academy of Sciences
S-54	Xusheng Zhang	Mn-Rich phosphate cathodes for Na-ion batteries with superior rate performance
S-55	Jiecheng Chen	Layered oxide coated with graphene as Na ion cathode material
S-56	Chunliu Xu	Surface engineering stabilizes rhombohedral sodium manganese hexacyanoferrates for high-energy Na-Ion batteries
S-57	Zheyi Zou	Na-ion migration mechanism of typical rhombohedral and monoclinic NASICONs
S-58	Yuan Liu	Identifying the intrinsic anti-site defect in manganese-rich NASICON-type cathodes
S-59	Xiaohan Tang	Intrinsic effects of precursor functional groups on the Na storage performance in carbon anodes
S-60	Yaoshen Niu	Earth-abundant Na-Mg-Fe-Mn-O cathode with reversible hybrid anionic and cationic redox
S-61	Shuai Han	The failure mechanism for aqueous sodium-ion battery in low temperatures
S-62	Zilin Hu	Suppression of voltage decay through Ni^{3+} barrier in anionic-redox active cathode for Na-ion batteries
S-63	Yang Yang	Explore potential advantages of Na-ion batteries with ultralow-concentration electrolyte
S-64	Zhao Chen	Unraveling the reaction mystery of Li and Na with dry air