



**PROGRAM OF THE SCIENTIFIC CONFERENCE
“HYDROGEN BASED ENERGY STORAGE:
STATUS and RECENT DEVELOPMENTS”**

**NASU Research Program “DEVELOPMENT OF SCIENTIFIC PRINCIPLES FOR
HYDROGEN PRODUCTION, STORAGE AND USE IN AUTONOMOUS ENERGY SUPPLY
SYSTEMS”**

**CONCLUDING WORKSHOP OF THE NATO SPS PROJECT G5233
“PORTABLE ENERGY SUPPLY”**

**25-26 of November, 2021
Physico-Mechanical Institute NASU, Lviv, Ukraine**



*This activity
is supported by:*

**The NATO Science for Peace
and Security Programme**

Day 1 – Thursday, November 25, 2021	
NASU Research Program “DEVELOPMENT OF SCIENTIFIC PRINCIPLES FOR HYDROGEN PRODUCTION, STORAGE AND USE IN AUTONOMOUS ENERGY SUPPLY SYSTEMS”	
Oral presentations – 15 min.	
<i>Moderators: P. Strizhak, I. Zavaliy, V. Berezovets</i>	
10⁰⁰-10¹⁵	Yu. Solonin (Program Director). Hydrogen energy and FC technologies as the main focus of the research program of the NAS of Ukraine.
10 ¹⁵ -10 ³⁰	O. Tashyrev, V. Hovorukha, O. Havryliuk, G. Gladka, I. Bida, Ya. Danko, O. Shabliy. Obtaining of fermentation parameters of experimental-industrial technology for synthesis of biohydrogen.
10 ³⁰ -10 ⁴⁵	M. Zipunnikov, V. Solovey, V. Semikin, I. Vorobjova. Research of the processes and improvement of the design and technological parameters of high pressure electrolysis systems intended for the autonomous helio-hydrogen power supply plants.
10 ⁴⁵ -11 ⁰⁰	O. Dudnyk, I. Sokolovska. Development of autonomous cogeneration hydrogen power plants with solid organic waste conversion.
11 ⁰⁰ -11 ¹⁵	Yu. Morozov, S. Kudrya, M. Kuznetsov. Development of methods for the production and use of hydrogen using renewable energy sources in autonomous power supply systems.
11 ¹⁵ -11 ³⁰	M. Kuznietsov, S. Kudrya, K. Petrenko. Development of scientific bases for the introduction of hydrogen obtained using renewable energy and prospects for further applying in the energy sector of Ukraine.
11 ³⁰ -11 ⁴⁵	I. Rusetskyi, M. Danilov, S. Fomanyuk, V. Smilyk, G. Kolbasov, L. Scherbakova, A. Krapivka, K. Graivoronskaya, Yu. Solonin. Portable photoelectrochemical cells with hydrogen accumulation.
11 ⁴⁵ -12 ⁰⁰	M. Ostapchuk, V. Zhovtyansky, E. Kolesnikova. Development of scientific and technological fundamentals of synthesis gas production from a mixture of hazardous organic waste.
12 ⁰⁰ -12 ¹⁵	D. Schur, Z. Gavrylyuk, An. Zolotarenko, Al. Zolotarenko. Use of hydrogen stores for motorbike transportation.
12¹⁵-14⁰⁰	Lunch
14 ⁰⁰ -14 ¹⁵	O. Savytsky, M. Savytsky, V. Vashenko, Yu. Shkrabalyuk. Development of a technological complex for the manufacture of light metal-plastic high-pressure cylinders for the accumulation, storage and use of hydrogen.
14 ¹⁵ -14 ³⁰	O. Ershova, V. Dobrovolsky, Yu. Solonin. Development of physicochemical principles for the creation of high-capacity hydride-forming materials and their use in stationary hydrogen storage systems and as electrodes for electrochemical energy system.
14 ³⁰ -14 ⁴⁵	I. Zavaliy, V. Berezovets, L. Vasylechko, P. Lyuty, Yu. Kosarchyn. Development of MgH ₂ -based hydrogen storage & generation materials and optimization of the hydrogen supply system for fuel cells.
14 ⁴⁵ -15 ⁰⁰	N. Chorna, Y. Matsevity, A. Avramenko. Metal-hydride accumulator for hydrogen supply systems to fuel cells.
15 ⁰⁰ -15 ¹⁵	V. Podhurska, O. Ostash, B. Vasylyv, O. Vasylyev, Ye. Brodnykovskii, I. Polishko, I. Danilenko, A. Shylo, T. Prikhna, V. Sverdun, O. Kuprin. Elaboration and study of materials for anodes and interconnects of lightweight solid oxide fuel cells.
15 ¹⁵ -15 ³⁰	Yu. Pirskyy, F. Manilevich, A. Kutsyi, T. Panchyshyn, B. Danil'tsev, A. Bogdanova, O. Krupennikova. Autonomous power source based on fuel cells and hydrolysis type hydrogen generator.
15 ³⁰ -15 ⁴⁵	Ya. Kurys, O. Pariiska, D. Mazur, V. Koshechko, V. Pokhodenko. Development of oxygen reduction hybrid electrocatalysts based on carbonized nanostructured organic conjugated polymers for hydrogen-oxygen FC.

15 ⁴⁵ -16 ⁰⁰	A. Stryutsky , V. Shevchenko, M. Gumenna, N. Klimenko. Development of proton-exchange systems for fuel cells based on polymer membranes and oligomeric ionic liquids
16 ⁰⁰ -16 ¹⁵	S. Soloviev , P. Kyriienko, D. Samoylenko, Ya. Kurylets, A. Kapran. Development of nanostructured catalysts and new technological solutions for the processing of biogas with the production of hydrogen fuel for the methane conversion unit of high-temperature FC
16¹⁵-17⁰⁰	Discussion

Day 2 – Friday, November 26, 2021 NATO SPS Project G5233 “PORTABLE ENERGY SUPPLY” and Invited presentations from NASU Hydrogen Research Program	
<i>Hybrid format (in person and online), In person - Conference Room of the Karpenko Physico-Mechanical Institute of the NAS of Ukraine (5, Naukova Str., Lviv)</i>	
<i>Moderators: V. Yartys, I. Zavaliy, V. Berezovets</i> Oral presentations – 15-20 min.	
10 ⁰⁰ -10 ⁰⁵	I. Zavaliy (Partner Country Project Director, PhMI). Welcoming remarks.
10 ⁰⁵ -10 ²⁰	R. Brewin (NATO SPS Programme Manager: Energy & Environmental Security and Science for Peace & Security, Brussels, Belgium). NATO program “Science for Peace and Security”: new collaboration opportunities between NATO and partner countries.
10 ²⁰ -10 ⁴⁰	V. Yartys, Yu. Solonin, I. Zavaliy (Editors): Presentation of the collective monograph “Hydrogen based energy storage: status and recent developments”.
10 ⁴⁰ -11 ⁰⁰	V. Yartys (NATO Country Project Director, IFE, Norway). Hydrogen based energy storage – status and recent developments: an overview.
11 ⁰⁰ -11 ²⁰	I. Zavaliy , V. Yartys, Yu. Pirsky, Yu. Solonin. Work programme and major outcome of the NATO SPS Project G5233 “ <i>Portable Energy Supply</i> ”.
11 ²⁰ -11 ⁴⁰	P. Strizhak , L. Dolgikh, A. Trypolskyi, I. Stolyarchuk, L. Stara, Y. Pyatnitsky. Autonomous catalytic hydrogen generator based on bioethanol steam reforming.
11 ⁴⁰ -12 ⁰⁰	Y. Brodnikovskiy , O. Vasylyev, I. Polishko, N. Lysyenko, L. Kovalenko, S. Ivanchenko, D. Brodnikovskiy, V. Chedryk, I. Brodnikovska, R. Horda, M. Smyrnova-Zamkova, I. Marek, O. Myslyvchenko, A. Ragulya, S. Orlyk, A. Belous, V. Vereshchak, A. Nosyk Development of tape casting technique regimes for manufacturing of solid oxide fuel cells.
12 ⁰⁰ -14 ⁰⁰	Lunch
14 ⁰⁰ -14 ²⁰	A. Kytsya , V. Berezovets, V. Verbovytsky, I. Zavaliy, V. Yartys. Controlling parameters of hydrogen generation via hydrolysis of MgH ₂ and NaBH ₄ .
14 ²⁰ -14 ⁴⁰	F. Manilevych , Yu. Pirskyy, A. Kutsyi, V. Yartys. Development of Al-based energy-storage materials for generating hydrogen from water at ambient conditions.
14 ⁴⁰ -15 ⁰⁰	D. Korablov , O. Bezdorozhev, V. Yartys, Yu. Solonin. Insights into mechano-chemical hydrogenation of magnesium using catalytic additives.
15 ⁰⁰ -15 ²⁰	Yu. Pirsky , V. Berezovets, F. Manilevych, A. Kutsyi, I. Zavaliy, V. Yartys. Development the hydrogen generator of hydrolysis type for portable current source based on fuel cell battery
15 ²⁰ -15 ⁴⁰	O. Zvirko, V. Stadnik, S. Ubizskii . Our experience of participation in the NATO Science for Peace and Security Programme.
15 ⁴⁰ -16 ⁰⁰	I. Bilan . Possibilities of national and international cooperation in the field of hydrogen energy-related materials and technologies.
16 ⁰⁰ -16 ²⁰	O. Riepkin (Ukrainian Hydrogen Council, Kyiv, Ukraine). An overview of the Ukrainian national “Hydrogen Strategy”.
16 ²⁰ -16 ⁵⁰	<i>Concluding remarks and round-the-table discussion.</i>
16 ⁵⁰ -17 ⁰⁰	<i>Closing remarks. Concluding of the conference.</i>