

ICCF23 LENR Conference Held Virtually

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Due to the worldwide COVID-19 pandemic and travel restrictions resulting from it, the 23rd International Conference on Condensed Matter Nuclear Science (ICCF23) was conducted as a virtual event. From June 9 to 11, 2021, people from around the world were able to view condensed matter nuclear science (CMNS)/low energy nuclear reactions (LENR) presentations at no cost from the comfort of their own homes.

The ICCF23 Conference Chair was Prof. Zhong-Qun Tian of Xiamen University, with co-chairs Profs. Kang Shi and Han-Tao Zhou from Xiamen and Dr. Wu-Shou Zhang from the Chinese Institute of Chemistry. The conference was hosted by the Innovation Laboratory for Sciences and Technologies of Energy Materials of Fujian Province (IKKEM), and the State Key Laboratory of Physical Chemistry of Solid Surfaces. The conference website, which organizers are committed to maintaining into the future, is: <http://ikkem.com/iccf-23.php>. It contains a wealth of information, including links to all of the presentations.

ICCF conferences held in-person typically last five to six days. ICCF23 was condensed into three days. Presenters had to pre-record their talks and submit the videos and materials ahead of the conference, in the event of any technical difficulties on the day of the presentation. Because of this, the organizers were better able to manage the flow and timeliness of the event. Each presentation was broadcast live at the allotted conference time, followed by a short question and answer session. There were very few technical difficulties.

The virtual nature of the event was conducive to fast, effective file sharing on the website. All of the plenary, invited and oral presentations are available in video at: http://ikkem.com/iccf-23_oralab.php. Each speaker is noted, with a link to the abstract of their talk and the video presentation. The page also has links to the opening and closing ceremonies. An in-person event includes poster presentations and ICCF23 organizers found a way to keep this trend. At a conference, poster participants prepare boards highlighting their theories or experiments; during breaks or at designated times, poster presenters are available at their boards to discuss the work. ICCF23 includes poster presentations at http://ikkem.com/iccf23_3min.php. The poster presentations were limited in time (videos of three minutes) but it is fantastic that space was made in the virtual program for posters. The poster web page includes links to the abstracts.

The virtual format was generally well-received. The most difficult aspect of the event was the large time difference between the host country China and the location of many of the participants. For instance, a U.S. researcher located on the East Coast would experience a 12-hour time difference. The conference began daily at 8:30 a.m. local Xiamen time, which was 8:30 p.m. the evening before on the East Coast of the U.S.! So, Western attendees may have been up all night watching or participating in the event. The conference had

433 registrants total (including some who registered after the event began) but the time difference impacted how many were online at any given time. China led the registration count with 193 people, followed by the U.S. (111) and Japan (20). Thirty-two countries were represented by participants.

Chairman Tian was happy with the results of the conference. He said in the closing ceremony: "We deeply appreciate that, despite many heated discussions, a friendly and open atmosphere was maintained that is crucial for the further health and smooth development of the field." Tian said that he stands ready and committed to helping with a smooth transition to ICCF24.

During the International Advisory Committee meeting at the end of day two, the proposal by Carl Page to host ICCF24 in later summer 2022 was accepted. The event will be held in person, but with a virtual footprint as well, with an anticipated location of the Silicon Valley region of California. Page and his Anthropocene Institute (AI) are committed to cleaning up the Earth's pollution by fostering (and often funding) science and technology efforts. Page noted in the closing ceremony that his passion for finding solutions to climate change leads him to "strange places and wonderful people." His introduction to the LENR field began when his friends encouraged a visit to Robert Godes' Brillouin Energy. He recalled, "I wasn't sure it was going to work, but that's the best reason to do experiments. If you only do things that work, you don't learn anything." His interest grew and AI is currently involved with many LENR-related projects. The conference website has already been established: <https://www.iccf24.org/>

The complete program calendar for ICCF23 is available at http://ikkem.com/iccf-23_program.php. Here we present the information by type of talk (plenary, invited, oral) during each session rather than by presentation order. Again, these presentations are online at http://ikkem.com/iccf-23_oralab.php.

ICCF23 organizers invited ten plenary speakers. There were also 22 invited talks, 14 oral presentations and 40 posters. Every day was broken into three sessions, each chaired by two individuals.

Session 1a was chaired by Yasuhiro Iwamura and Wu-Shou Zhang. This session had two plenary talks: Matthew Trevithick (Google/U.S.), "A Perspective from the 'Google Group'" and Ping Chen (Dalian Institute of Chemical Physics/China), "Complex Transition Metal Hydrides." Four invited talks were part of this session: "Progress Towards Replication, Revisited" (Michael McKubre); "A Lattice Energy Converter" (Frank Gordon); "Direct Measurement Confirming Generation of Excess Heat" (Prahlada Ramarao); "Ultra-High Density Cluster Enabled LENR" (George Miley). One oral presentation was part of Session 1a, "Long Term Anomalous Heat From 9 nm Pd Nanoparticles in an Electrochemical Cell," by Graham Hubler.

Session 1b was chaired by Anatoly Klimov and Jian Tian

and included the third plenary talk, “Progress in Energy Generation Research Using Nano-Metal with Hydrogen/Deuterium Gas,” by Yasuhiro Iwamura *et al.* (Tohoku University/Japan). The invited talks for this session were: “European Union’s Project: Clean Energy from Hydrogen-Metal Systems” (Konrad Czerski); “Plasmonic Condensed Matter Nuclear Fusion” (Katsuaki Tanabe); “Laser Induced Transmutation in Palladium Thin Films in Hydrogen Atmosphere” (Jean-Paul Biberian *et al.*); “Electrodeposition of Hydrogen Adatoms on Graphene” (Dong-Ping Zhan *et al.*). The oral presentation during this timeframe was by Tomotaka Kobayashi *et al.*, “Temperature and Pressure Dependence of Anomalous Heat Generation Occurring in Hydrogen Gas Absorption by Metal Powder.”

David Nagel and Wu-Shu Zhang chaired Session 1c, with Akito Takahashi (Technova/Japan) giving the fourth plenary speech, “Progress in Nano-Metal Hydrogen Energy.” The invited talk was given by Sheng Hu on “Hydrogen Isotope Separation Through Two-Dimensional Crystals.”

Day one and Session 1 were concluded with a discussion led by David Nagel and Wu-Shu Zhang.

Day two, June 10, was opened by chairs of Session 2a, Steve Katinsky and Robert Duncan. Lawrence Forsley (Global Energy Corporation/U.S.) gave a plenary talk on “Conventional Fusion in an Unconventional Place.” [See an interview with Forsley on p. 11 of this issue, which includes a discussion of NASA work presented at ICCF23 and some commentary about ICCF23.] Francis Tanzella (Energy Research Center/U.S.) was the sixth plenary speaker, presenting work he did with others on “Some Novel Analytical Techniques Applied to LENR Active Materials.” Session 2a included five invited talks: “Input Stimuli and Output Signals in LENR Experiments” (David Nagel); “Review of Cavitation Induced Effects” (Roger Stringham); “Early Excess Power Using NRL Pd-B Cathodes” (Melvin Miles); “Excess Heat in a Pd(Pt)-LiOD+D₂O Reflux Open-Electrolytic Cell” (Wu-Shou Zhang *et al.*); “Abnormal Enhancement of Nuclear Reaction in Extreme Environments Studied by Ion Beam Experiments” (Tie-Shan Wang). The oral presentation of this session was “Progress of Reproducing Mizuno’s Experiment in QiuRan Lab” by Hang Zhang *et al.*

Session 2b was chaired by Michael McKubre and Francesco Celani. Alex Parkhomov (KIT R&D Laboratory/Russia) presented the plenary talk “Huge Variety of Nuclides that Arise in the LENR Processes: Attempt at Explanation.” Two invited talks included: “Electromagnetic Excitation of Coaxially-Coiled Constantan Wires by High-Power, High-Voltage, Microsecond Pulses” (Francesco Celani *et al.*) and “Decay-Instability of Transmuted Chemical Elements Obtained in LENR Experiment” (Anatoly Klimov). Three oral presentations were conducted during Session 2b: “The Explanatory Power of the Structured Atom Model” by J.E. Kaal *et al.*; “Nuclear Transmutations Are Better Facilitated by Alloys Over Pure Metal Cathodes in Electrolysis” by Ankit Kumar *et al.*; “Artificial Radioactivity in the Nonequilibrium Plasma of the Glow Discharge in Pd-D and Ni-H from the Point of View of Nuclear-Chemical Reactions” by Irina Savvatimova.

The last, shorter session of day two (Session 2c) was chaired by Jean-Paul Biberian and Yasuhiro Iwamura, who also led the discussion at the end of the day. This session included just one presentation, a plenary talk by Peter Hagelstein (MIT/U.S.) on “Recent Progress on Phonon-

Nuclear Theoretical Models.”

The third day of the conference began with Session 3c, chaired by Jirohta Kasagi and Francis Tanzella. It featured the plenary talk “The Nature of the D+D Fusion Reaction in Palladium and Nickel” by Edmund Storms (Kiva Labs/U.S.). Invited talks included: “CF/LANR Excess Heat Activates Shape Memory Alloys” (Mitchell Swartz); “Radiant Calorimetry of Excess Heat Production in NiCu Multilayer Foil with Hydrogen Gas” (Jirohta Kasagi *et al.*); “The Electromagnetic Considerations of the Nuclear Force, Part II: The Determination of the Lowest Energy Configurations for Nuclei” (N.L. Bowen); “A Role for Relativity in Cold Fusion” (Andrew Meulenberg); “Can the Collective Emission of the Excited Surface Phonon Trigger Low-Energy Nuclear Reactions?” (Song-Yuan Ding *et al.*). The two oral presentations of this session were by David Nagel (“Where and How LENR Occur”) and S. Dana Seccombe (“Phonon Assisted Fusion”).

Session 3b was chaired by Vittorio Violante and Tie-Shan Wang and included one invited talk, “Excess Energy from Heat-Exchange Systems” by Bin-Juine Huang *et al.* This part of day three included five oral presentations: “Correlated Quantum States in LENR: First Exciting Results from an Experimental Test” by Sergio Bartalucci *et al.*; “LENR Solution of the Cosmological Lithium Problem” by Vladimir Vysotskii *et al.*; “Abnormal Absorption of Hydrogen in Nickel at Ambient Temperature with Associated Emission of Neutrons” by Ubaldo Mastromatteo; “Atomic Nuclei Binding Energy Similarities between Binding Energy Values of Chemical Elements: Example of Nickel and Copper” by Philippe Hatt; “Error Analysis in D(H)/Pd Gas-Loading System” by Xing-Ye *et al.*

This third and final day of the conference ended with Session 3c, chaired by Peter Hagelstein and Frank Gordon; they also led the discussion at the end of the session. Sveinn Olafsson (University of Iceland/Iceland) presented the plenary talk “Experimental Setup for Studying Rydberg Matter of Hydrogen.” One oral presentation was presented in this session: “Spectro-Electrochemical Characterization of Ultra-Thin Film of Pd-H/D Single-Crystal Electrode and Au@Pd Nanoparticles” by Zhong-Qun Tian *et al.*

Chairman Tian and his team are to be commended for presenting an organized, successful event amid all that is going on in the world. While the cold fusioners surely missed the opportunity to meet in person and sightsee around the host city, ICCF23 was a fantastic event.

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