

17th International Symposium on Metal-Hydrogen Systems

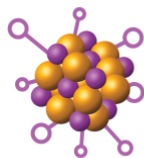
30 October – 3 November 2022
Pan Pacific Hotel, Perth, Western Australia

Sunday 30 October

16.00 – 18.30	Registration Desk Open Convention Floor, Pan Pacific Perth
17.00 – 19.00	Welcome Reception Lobby Bar, Pan Pacific Perth

Monday 31 October 2022

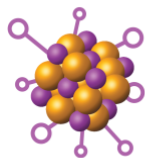
07.30 – 17.00	Registration Desk Open		
08.30 – 10.00	PLENARY SESSION 1 <i>Chair: Evan Gray</i>		Golden Ballroom
08.30 – 08.40	Welcome to Country <i>Aunty Marie Taylor</i>		
08.40 – 08.50	Opening Address <i>Prof Craig Buckley, Curtin University</i>		
08.50 – 09.00	Opening Address <i>Prof Harlene Hayne, Curtin University Vice Chancellor</i>		
09.00 – 09.45	Opening Plenary Address <i>Dr Patrick Hartley, CSIRO</i>		
09.45 – 10.00	Questions <i>Dr Patrick Hartley, CSIRO</i>		
10.00 – 10.30	Morning Tea		Golden Ballroom North
10.30 – 12.30	CONCURRENT SESSIONS		
	Applications (A) <i>Chair: Gavin Walker</i>	Fundamentals (F) <i>Chair: Fermin Cuevas</i>	Materials (M) <i>Chair: Bjorgvin Hjorvarsson</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hammersley</i>
10.30 – 10.55	Invited Speaker Presentation Hydrides for Hydrogen Storage and Compression: from basic materials development to system design Martin Dornheim	Invited Speaker Presentation Understanding mechanisms for molecular hydrogen storage and separation in solid porous frameworks using neutron characterisation methods Vanessa Peterson	Invited Speaker Presentation In situ investigation of deuterium sorption in forged Mg-Mg₂Ni composite Patricia de Rango
10.55 – 11.10	Novel materials for hydrogen storage: The (NoMaH) project Elena Rozzi	Hydrogen Storage Properties of a New Ti-V-Cr-Zr-Nb High Entropy Alloy Anis Bouzidi	Hydrogen storage properties of novel ScYNdGd medium-entropy alloy with a FCC structure Mateusz Balcerzak
11.10 – 11.25	Interfacial Engineering of Confined Metal-Hydrogen Nanostructure for Mass and Heat Transfer in Solid-State Hydrogen Storage Eun Seon Cho	Experimental and theoretical study on the C15 phase structure stability of Y_xNi_{2-y}Mn_y system Junxian Zhang	Ti_{0.9}V_{0.3}MnNi_{0.8} Laves phase compound under very high hydrogen pressure Véronique Charbonnier
11.25 – 11.40	Tank blowdown from hydrogen storage tanks: A comparison between metal hydrides and compressed hydrogen Stefano Deledda	Investigating nanosized transition metal hydrides with high energetic ¹⁵N-ion beams Kristina Komander	Crystal Structure and Hydrogen Storage Properties Evaluation of (Ti_xZr_{1-x})₃₃(CrMnFeNi)₆₇ 0 ≤ x ≤ 1 High Entropy Alloys Ricardo Floriano



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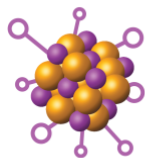
11.40 – 11.55	Evolution of thermal battery systems at Curtin University Terry Humphries	Thermodynamic evaluation of Phase Transition in the Pd-H system using Electrochemical- and Gas Hydrogen Permeation System with a Tubular Cell Ayane Ibi	Investigating off-stoichiometric Ti-Cr based AB₂ Laves phase alloys for solid-state hydrogen storage Alex McGrath
11.55 – 12.10	One-step mild reactivation of TiFe-based alloys upon oxidation for hydrogen storage Wei Liu	Gradient composition alloy nanoparticle arrays for hydrogen sensing Carl Andersson	Modelling techniques in materials-based hydrogen storage Cesar Menendez Muniz
12.10 – 12.25	Non-Corrosive Preparation of Nanoporous Mg Structure for Enhanced Hydrogen Storage by Facilitated Molecular and Atomic Diffusion of Hydrogen YongJun Cho	Hydrogenation property and phase transformation pathway of high entropy TiVCrNbMo alloy Kouji Sakaki	
12.25 – 13.30	Lunch Golden Ballroom North		
13.30 – 15.10	CONCURRENT SESSIONS		
	Applications (A) <i>Chair: Mauricio Di Lorenzo</i>	Fundamentals (F) <i>Chair: Bjorn Hauback</i>	Materials (M) <i>Chair: Terry Humphries</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hammersley</i>
13.30 – 13.55	<u>Invited Speaker Presentation</u> Yaroslav Filinchuk	<u>Invited Speaker Presentation</u> Hydrogen Metal Systems: role in the Hydrogen Industry value chain and overview of research in CSIRO Nikolai Kinaev	<u>Invited Speaker Presentation</u> Methods to Improve the First Hydrogenation of the Vanadium-Rich BCC Alloy Ti₁₆V₆₀Cr₂₄ Jacques Huot
13.55 – 14.20	<u>Invited Speaker Presentation</u> In-situ TEM-observation of hydride formation in Mg-films Astrid Pundt	<u>Invited Speaker Presentation</u> Electrolyte-assisted hydrogen storage reactions Jason Graetz	<u>Invited Speaker Presentation</u> Fabrication of metal-organic frameworks for adsorptive hydrogen storage Henrietta Langmi
14.20 – 14.35	Hydrogen Storage: Adsorbents & Metal Hydrides David Kiska	The importance of defects for a unified kinetics model for both high temperature and low temperature metal hydrides Marcus Adams	Theoretical study of possible reaction pathways from BH₄⁻ to B₁₂H₁₂²⁻ Hans Hagemann
14.35 – 14.50	Solid-state green hydrogen export using NaBH₄ with regeneration via metal hydrides Ainee Ibrahim	Mo³⁺ hydride as the origin of HER activity and selective NADH regeneration in Mo electrocatalysts Jeremy Bau	Complex hydrides: beyond hydrogen storage Wojciech Wegner 
14.50 – 15.05	Chemical composition effect on hydrogen absorption of high entropy alloys Claudia Zlotea	CO₂ hydrogenation using MOFs encapsulated PdAg nano-catalysts for formic acid production Chao Wu	Modification of Borides for Hydrogenation to Borohydride under Moderate Conditions Godwin Severa
15.05 – 15.30	Afternoon Tea Golden Ballroom North		



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15.30 – 17.05			
CONCURRENT SESSIONS			
	Applications (A) <i>Chair: Peter Connolly</i>	Fundamentals (F) <i>Chair: Jacques Huot</i>	Materials (M) <i>Chair: Zhenguo Huang</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hamersley</i>
15.30 – 15.55	<u>Invited Speaker Presentation</u> Improving the performance of hydrogen fuel cells Andrew Dicks	<u>Invited Speaker Presentation</u> Structure and as/Electrochemical Hydrogenation Properties of the Ni/Co/Al Leached Alloys Andreas Züttel 	<u>Invited Speaker Presentation</u> Materials for H₂ Storage and Transport – An Overview of the U.S. DOE Activities Ned Stetson
15.55 – 16.20	<u>Invited Speaker Presentation</u> Probing Hydrogen Mesosorption Through High Pressure, Variable Temperature NMR Craig Jensen	<u>Invited Speaker Presentation</u> Studied by in situ diffraction structure-properties relationships in metal hydrides used as advanced metal hydride anodes and hydrogen storage materials Volodymyr Yartys	<u>Invited Speaker Presentation</u> Hydrogen production through pyrolysis of methane in a molten metal catalyst Mehdi Jafarian 
16.20 – 16.35	Toward new proton exchange batteries based on ionic liquid electrolyte: metal hydride electrode / electrolyte coupling Judith Monnier	Ab Initio Modelling of Hydrogen Storage in Intermetallic and High Entropy Alloys Sanliang Ling	Investigating factors to improve the hydrogen storage performance of metal borohydride ammoniates Jacob Prosser
16.35 – 16.50	Interface induced fast ion conduction in complex hydride nanocomposites: Interplay between hydride and oxide properties Peter Ngene 	Inelastic Neutron Scattering, a unique tool to study hydrogen in materials Anibal (Timmy) Ramirez-Cuesta	Effect of cerium substitution on activation and hydrogen storage properties of the vanadium-rich BCC solid solution alloys Ankita Bishnoi
16.50 – 17.05	Separation of Hydrogen from Natural gas using adsorption technologies Leila Dehdari	Hydrogen-induced enhancement of thermal stability in VZr(H) metallic glasses Gunnar Palsson	On some basic intermetallic properties affecting corresponding hydride behavior Isaac Jacob 

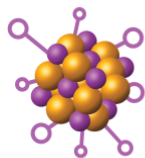


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Tuesday 1 November 2022

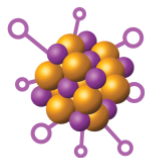
08.30 – 17.00	Registration Desk Open		
09.00 – 09.10	Opening Address <i>Hon Alannah MacTiernan, Government Minister for Hydrogen Industry (Invited)</i>		
09.10 – 10.10	PLENARY SESSION 2 <i>Chair: Torben Jensen</i>		Golden Ballroom
09.10 – 09.55	Plenary Address Thermodynamics of interstitial metal hydrides: things we thought we knew <i>Prof Evan Gray, Griffith University</i>		
09.55 – 10.10	Q&A Session <i>Prof Evan Gray, Griffith University</i>		
10.10 – 10.40	Morning Tea		Golden Ballroom North
10.40 – 12.35	CONCURRENT SESSIONS		
	Applications (A) <i>Chair: Matseusz Balcerzak</i>	Fundamentals (F) <i>Chair: Astrid Pundt</i>	Materials (M) <i>Chair: Petra Szilagyí</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hammersley</i>
10.40 – 11.05	<u>Invited Speaker Presentation</u> A decade of hydrides in multivalent batteries and getting stronger Rana Mohtadi 	<u>Invited Speaker Presentation</u> Self-shearing reactive milling as a new method of synthesis of solid state hydrogen storage materials Marek Polanski	<u>Invited Speaker Presentation</u> Core-shell hydrides: A platform for tunable hydrogen storage properties Kondo-François Aguey-Zinsou
11.05 – 11.20	Hydrogen purification with metal hydrides for fuel-cell based mobility Kateryna Peinecke	Influence of composition, crystallite size and interface effects on the hydrogenation properties of Ti-rich MgH₂-TiH₂ nanocomposites Fermin Cuevas	Nanoconfinement of hydrogen in nanoporous carbons: insights from atomistic simulations Jacob Martin
11.20 – 11.35	Efficient hydrogen recovery and purification by metal hydride Zhen Wu	Switchable metamaterials in hydrogen absorbing multilayers Daniel Azofeifa	3D-Linker MOFs for the low pressure separation of liquid-organic hydrogen carriers Lauren MacReadie
11.35 – 11.50	Hydrogen separation from methane using a trapdoor material-Zeolite 3A Jianing Yang	Hydrogen Uptake and Permeation via Operando Reflecting Electron Energy Loss Spectroscopy Selim Kazaz	Mg-based hydrides synthesized by the High-Temperature Reactive Ball Milling Agata Baran
11.50 – 12.05	Hydrogen production from the air Gang Kevin Li	Overcoming the “pressure gap” to investigate the hydrogen storage properties of high entropy alloys with XPS Christopher Ryder	Temperature independent superdense state of the monolayer hydrogen on adsorbent Hiroyuki Gi
12.05 – 12.20	Atomic simulation study of lath martensite boundary character on hydrogen segregation using molecular statics simulation approach Ahmad Mirzaei	Ammonia Synthesis via Chemical Looping of Li-compounds Hiroyuki Miyaoka	All that glitters is not gold. Issues related to the synthesis of magnesium - noble metals alloys. Magda Peška
12.20 – 12.35	Effects of Electrochemical Hydrogen Loading Treatment on Sm-Fe Magnetostrictive	Alkali-metal hydride/graphite nanocomposites as an efficient catalyst for ammonia synthesis	Characterization of materials exposed to H₂-containing



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	Thin Films with Acoustic Emission (AE) monitoring and its Adhesion Evaluation Helmut Takahiro Uchida	Peter Ngene 	atmospheres at elevated temperatures and pressures Alexander Ilyushechkin
12.35 – 13.30	Lunch Golden Ballroom North		
13.30 – 14.50	PLENARY SESSION 3 Golden Ballroom <i>Chair: Francois Aguey-Zinsou</i>		
13.30 – 14.15	Plenary Address Hydrides for energy storage and chemical transformation <i>Prof. Ping Chen, Dalian Institute</i>		
14.15 – 14.30	Q&A Session <i>Prof. Ping Chen, Dalian Institute</i>		
14.30 – 14.50	Memorial Speech in honor of Annick Percheron-Guégan and Michel Latroche <i>Valérie Paul-Boncour and Fermin Cuevas</i>		
14.50 – 15.30	Afternoon Tea Golden Ballroom North		
15.30 – 17.00	CONCURRENT SESSIONS		
	Fundamentals (F) <i>Chair: Marek Polanski</i>	Fundamentals (F) <i>Chair: Stefano Deledda</i>	Applications (A) <i>Chair: Jacob Martin</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hammersley</i>
15.30 – 15.55	<u>Invited Speaker Presentation</u> Development and demonstration of a hydrogen-based high temperature heat storage system at technical scale Michael Felderhoff	<u>Invited Speaker Presentation</u> HyCARE project: hydrogen storage from lab to industrial scale Paola Rizzi	<u>Invited Speaker Presentation</u> Hydrogen nuclear spin conversion catalysis Neil Robinson
15.55 – 16.20	<u>Invited Speaker Presentation</u> Reproducibility in Hydrogen Storage Material Research Darren Broom	<u>Invited Speaker Presentation</u> Vishnu Pareek	<u>Invited Speaker Presentation</u> ENERGY EFFICIENCY: the misguidance of common sense Bjorgvin Hjorvarsson
16.20 – 16.45	<u>Invited Speaker Presentation</u> Large-Scale Underground Hydrogen Storage: How Much Should We Be Concerned on Storage Integrity? Sam Xie	<u>Invited Speaker Presentation</u> Multiscale modeling of metal hydrides within the HyMARC Consortium Brandon Wood	<u>Invited Speaker Presentation</u> Hydrogen generation by catalysis Hongqi Sun
16.45 – 17.00	Structural, magnetic and magnetocaloric transitions in $Y_{0.9}Gd_{0.1}Fe_2$ hydrides Valerie Paul-Boncour	Composition – dependent thermodynamics of Laves-type $AB_2 \pm XH_y$ hydrides tailored using statistical analysis Volodymyr Yartys	Structure and Gas/Electrochemical Hydrogenation Properties of the Ni/Co/Al Leached Alloys Ihor Zavaliiy 
17.00 – 19.00	Poster Session and Refreshments Golden Ballroom North & Foyer		
	Nicolas Armanet Haruya Baba Mateusz Balcerzak Amanda Berger Siree Burapornpong Sylvain Challet Bruno Da Silva Falcao Bérengère Evin Retna Putri Fauzia	Motoko Ishida Shuichi Kaneta Aaron Keith Hirotaka Kimura Sanliang Ling Haizhen Liu Felipe Marques Oksana Melikhova Sergey Mitrokhin	Oliver Morrison Ida Nawrocka Jae-Young Park McKinley Prager Takaya Sato Cody Sugai Kenta Watanabe Kyran Williamson Keisuke Yoshida




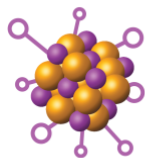
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	Ryota Gemma Naoki Goto	Oleksandr Morozov	Fatema Tuz Zohra
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Wednesday 2 November 2022

08.30 – 17.00	Registration Desk Open		
09.00 – 10.00	PLENARY SESSION 4 <i>Chair: Shin-Ichi Orimo</i>		Golden Ballroom
09.00 – 09.45	Plenary Address <i>Petra DeJongh, Universiteit Utrecht</i>		
09.45 – 10.00	Q&A Session <i>Petra DeJongh, Universiteit Utrecht</i>		
10.00 – 10.30	Morning Tea		Golden Ballroom North
10.30 – 12.25	CONCURRENT SESSIONS		
	Applications (A) <i>Chair: Andrew Dicks</i>	Fundamentals (F) <i>Chair: Michael Hirscher</i>	Fundamentals (F) <i>Chair: Pauran Hudson</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hamersley</i>
10.30 – 10.55	Invited Speaker Presentation Growing green hydrogen applications through the decarbonisation of fossil-based industries. Eric May	Invited Speaker Presentation Hydrogen-rich B,N containing systems for hydrogen storage Zhenguo Huang	Invited Speaker Presentation Energy storage at scale – Hydrogen carrier fundamentals are defined by applications Tom Autrey 
10.55 – 11.10	Hydrogen on demand from Mg Alloys and LPSO based composites Jean-louis Bobet	Hydrogen isotope separation in flexible metal-organic frameworks Linda Zhang	MH utilization for heat storage and chemical compressor through the control of pressure or temperature Fangqin Guo
11.10 – 11.25	Development of a prototype 2-stage metal hydride compressor Ashleigh Cousins	Palladium aging under tritium: Experimental characterizations Bérengère Evin	Thermal stability of hafnium hydride Joseph Pollard
11.25 – 11.40	Optimisation of heat transfer mechanisms in metal hydride reactors for TCES applications Eleanor McCabe	Particles Size Effects of Palladium Powder on Pd-D and Pd-T Systems Dorian Gaboriau	Hydrogen-induced volume changes, the dipole tensor and the elastic H-H interaction in a metallic glass Johan Bylin
11.40 – 11.55	Improving Dehydrogenation Kinetics of NaAlH₄ by Nanoconfinement with Nitrogen-Doped Porous Carbon HyeonJi Kim	Development of new materials for hydrogen production by water electrolysis in alkaline medium and hydrogen storage Victor Raud	Effect of Mg addition on the hydrogen storage properties of TiVNbCr multicomponent alloy processed by reactive ball milling Renato Belli Strozi
11.55 – 12.10	Hydrogen Permeability in Steel Pipeline Materials Bithiah Esabunor-Nukie	Ionic conductivity in complex hydrides employing novel IMPED-Cell Agnieszka Prus	Fundamental insight into methane pyrolysis for hydrogen production Praveen Selvakumar
12.10 - 1700	Tour – Lunch on the bus		

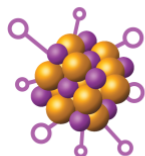


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Thursday 3 November 2022

08.30 – 17.00	Registration Desk Open		
09.00 – 10.00	PLENARY SESSION 5 Golden Ballroom <i>Chair: Petra DeJongh</i>		
09.00 – 09.45	Plenary Address Nanoporous adsorbents for hydrogen storage <i>Michael Hirscher, Max-Planck-Institut</i>		
09.45 – 10.00	Q&A Session <i>Michael Hirscher, Max-Planck-Institut</i>		
10.00 – 10.30	Morning Tea Golden Ballroom North		
10.30 – 12.25	CONCURRENT SESSIONS		
	Applications (A) <i>Chair: Yaroslav Filinchuk</i>	Fundamentals (F) <i>Chair: Craig Jensen</i>	Materials (M) <i>Chair: Volodymyr Yartys</i>
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hamersley</i>
10.30 – 10.55	Invited Speaker Presentation Super-ionic conduction of mono-/di-valent cations and advanced battery application of complex hydrides: viewpoint from “HYDROEGNOMICS” project <i>Shin-Ichi Orimo</i>	Invited Speaker Presentation Modelling kinetics and designing practical metal hydride stores <i>David Grant</i>	Invited Speaker Presentation Hydrogen storage in high-entropy alloys <i>Bjorn Hauback</i>
10.55 – 11.20	Invited Speaker Presentation Metal hydrides as electrolytes for solid state batteries <i>Torben Jensen</i>	Invited Speaker Presentation Hydrogen storage in intermetallic alloys suitable for stationary applications <i>Sabrina Sartori</i>	Influence of aluminium addition on the hydrogen storage properties of $Al_x(TiVNb)_{100-x}$ <i>Nayely Pineda Romero</i>
11.20 – 11.35	Heavy metal substituted closo-dodecaborane salts as potential solid-state electrolytes <i>Thomas Hales</i>	Metal hydride-carbon composite structures for improved heat transfer <i>Ashleigh Cousins</i>	In-situ hydrogen sorption study of hypo-eutectic Mg-La alloy after the first absorption using synchrotron powder XRD and high-voltage TEM <i>Manjin Kim</i>
11.35 – 11.50	Achieving long all-solid-state battery cycling using complex hydride solid-state electrolyte <i>Valerio Gulino</i> 	Saline hydrides with aluminium doping for thermochemical battery application <i>Lucie Desage</i>	Bulk positron lifetime and hydrogen storage capacity of refractory metal high entropy alloys <i>Jakub Cizek</i>
11.50 – 12.05	Atomistic Insights of Complex Hydrides for All-Solid-State-Battery Application using Molecular Dynamics Simulation <i>Kartik Sau</i>	Recovering materials from energy devices for electrocatalytic applications <i>Arshdeep Kaur</i>	Nanostructural Perspective for Destabilization of Mg Hydride Using the Stress-induced Lattice Distortion <i>Kohta Asano</i>
12.05 – 12.20	Important role of $LiBH_4$ on Li transfer as an electrolyte for all-solid-state Li-ion batteries <i>Khushbu Sharma</i>	Investigating the dehydrogenation pathway for lithium borohydride / hydroxide system <i>Sweta Munshi</i>	



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12.25 – 13.30	Lunch			Golden Ballroom North
13.30 – 15.0-	CONCURRENT SESSIONS			
	Applications (A) <i>Chair: Martin Dornheim</i>	Fundamentals (F) <i>Chair: Hans Hagemann</i>	Materials (M) <i>Chair: Henrietta Langmi</i>	
<i>Room</i>	<i>Golden Ballroom South</i>	<i>Golden Ballroom Centre</i>	<i>Hammersley</i>	
13.30 – 13.55	<u>Invited Speaker Presentation</u> Advanced Semiconductor and Catalytic Materials for Renewable Hydrogen Production Siva Karuturi	<u>Invited Speaker Presentation</u> Thermodynamics of interstitial metal hydrides: things we thought we knew Gavin Walker	<u>Invited Speaker Presentation</u> Guest-ception - We need to go deeper Petra Szilagyi	
13.55 – 14.20	<u>Invited Speaker Presentation</u> Electrochemical properties and spectroscopic characterization of <i>closo</i> -borate electrolyte systems Joseph Teprovič		<u>Invited Speaker Presentation</u> Thermodynamic and kinetic control over reaction pathways in metal hydrides through compositional tuning and nanoconfinement Vitalie Stavila	
14.20 – 15.00	Afternoon Tea			Golden Ballroom North
15.00 – 15.45	Closing Ceremony <i>Prof Craig Buckley, Curtin University</i>			Golden Ballroom
19.00 – 23.00	Symposium Gala Dinner			State Reception Centre Kings Park