IEA Hydrogen Implementing Agreement Task 17
Solid and Liquid State Hydrogen Storage Materials

List of Publications, Presentations and Patents through 2004

[PU]=Publication, [PR]=Presentation, [PA]=Patent

Carbon Projects

Project C-1. Hydrogen storage in single-wall carbon nanotubes (R. Chahine [Canada] and M. Heben [USA])

É. Poirier, R. Chahine, A. Tessier, T.K. Bose: "Gravimetric and volumetric approaches adapted for hydrogen sorption measurements with in-situ conditioning on small sorbent samples". Submitted to Rev. of Sci. Instr., (2004). [PU].

Z. Dehouche, L. Lafi, J. Goyette, R. Chahine: "Catalytic Effect of SWNT on Hydrogen Sorption Properties of Sodium Alanates", Submitted to J. Nanotechnology, (2004) [PU]

L. Lafi, D. Cossement, R. Chahine: "Combination of Raman spectroscopy and N_2 adsorption analysis of the effect of single-wall nanotubes purification". Submitted to Carbon Journal, (2004) [PU]

É. Poirier, R. Chahine, P. Bénard, D. Cossement, L. Lafi, É. Mélançon, T.K. Bose, S. Désilets: "Storage of hydrogen on single-walled carbon nanotubes and other carbon structures", J. Appl. Phys. A, **A78** (2004) 961-967 [PU]

R. Chahine, "Hydrogen Storage in Carbon Structures", Annual APS March Meeting, Palais des Congrès de Montréal, Montréal, QC, March 22-26, 2004. [PR]

J. Hamelin J., F. Fouda-Onana, D. Cossement, R. Chahine: "New Nanostructured Carbon Material as Catalyst Support for PEMFC", 15th World Hydrogen Energy Conference, Yokohama, Japan, June 27 – July 2, 2004 [PR + PU]

Z. Dehouche, L. Lafi, N. Grimard, F. Laurencelle, J. Goyette, R. Chahine: "Singe-wall carbon nanotubes effect on hydrogen sorption kinetics of catalyzed $NaAlH_4$ hydride", Hydrogen and Fuel Cells 2004 Conference, Toronto, ON, September 25-28, 2004 [PR +PU]

L. Lafi, G.P. Dai, R. Chahine: "Activation of Carbon Nanotubes for Hydrogen Adsorption", Hydrogen and Fuel Cells 2004 Conference, Toronto, ON, September 25-28, 2004 [PR +PU]

É. Poirier, R. Chahine, A. Tessier, D. Cossement, L. Lafi, T.K. Bose: "Hydrogen storage in single-walled carbon nanotubes: methods and results", Hydrogen and Fuel Cells 2004 Conference, Toronto, ON, September 25-28, 2004 [PR +PU]

D. Villers, D. Jobin, C. Soucy, D. Cossement, R. Chahine, L. Breau, D. Bélanger: "The Influence of the Range of Electroactivity and Capacitance of Conducting Polymers on the Performance of Carbon/Conducting Polymer Hybrid Supercapacitor", J. of the Electrochemical Society, **150** (2003) A747-A752 [PU]

F. Fouda-Onana, D. Cossement, R. Chahine, J. Hamelin: “New Nanostructured Carbon Material as Catalyst Support for PEMFC”, New Materials for Electrochemical Systems, Montreal, QC, July 6-11, 2003 [PR + PU]]

É. Poirier, R. Chahine, T.K. Bose, D. Cossement, S. Désilets, L. Lafi, A. Tessier: “Hydrogen storage in single-walled carbon nanotubes: methods and results”, Hydrogen and Fuel cells 2003 conference, Vancouver, B. C., June 8-11, 2003 [PR + PU]

F. Chahine: “Review of Progress in H_2 storage technologies”, Hydrogen and Fuel cells 2003 conference, Vancouver, B.C., June 8-11, 2003 [PR]

A. Czerny, R. Chahine: “Study of Thermal Effects in Sorption Systems”, Hydrogen and Fuel cells Conference, Vancouver, B. C., June 8-11, 2003 [PR +PU]

R. Chahine: “Hydrogen Storage Technologies - A call for Complex Hydrides”; 53rd Canadian Chemical Engineering & PRES'03 Conference, Hamilton, ON, October 26-29, 2003 [PR]

É. Poirier É., R.Chahine, A. Tessier, T.K. Bose : “Precise Sorption Measurement Systems with in situ Conditioning”, 14th World Hydrogen Energy Conference, Montreal, QC, June 9-13, 2002 [PR +PU]

B. Simard B. et al.: “Aspects of Hydrogen Storage in Nanostructred Carbon in Canada”, 14th World Hydrogen Energy Conference, Montreal, QC, June 9-13, 2002 [PR + PU]

S. Désilets R. Chahine, et al.: “Multi-Disciplinary Research on Hydrogen Storage in Nanostructured Carbon”, Canadian Hydrogen Storage Workshop, National Research Council, Ottawa, ON, February 1st, 2002 [PR]

A.C. Dillon: invited talk “Controlling Single-wall Carbon Nanotube Size and Type with Laser Peak Pulse Power”, A.C. Dillon, J.L. Alleman, P.A. Parilla, K.E.H. Gilbert, K.M. Jones, and M.J. Heben at the Gordon Conference on “Laser Interactions with Materials”, Jul 21-26, 2002 [PR]

A.C. Dillon, K.E.H. Gilbert , T. Gennett, L. Grigorian, J.L. Alleman, K.M. Jones, P.A. Parilla, M.J. Heben: “Hydrogen Storage in Single-Wall Carbon Nanotubes”, 14th Annual World Hydrogen Energy Conference, June 9-13, 2002, Montreal, QC, Canada [PR + PU]

A.C. Dillon, K.E.H. Gilbert, P.A. Parilla, J.L. Alleman, G.L. Hornyak, K.M. Jones, M.J. Heben: “Carbon Nanotubes for Hydrogen Storage”, Proceedings of the 2002 U.S. Department of Energy Hydrogen Program Annual Review Meeting, Golden, May 6-8, 2002, NREL [PR+PU]

G. L. Hornyak, L. Grigorian, A. C. Dillon, P. A. Parilla, K. M. Jones, M. J. Heben: ”A Temperature Window for Chemical Vapor Decomposition Growth of Single-Wall Carbon Nanotubes” J. Phys. Chem. B, **106** (2002), 2821-2825 [PU]

A.C. Dillon, P.A. Parilla, J.L. Alleman, T. Gennett, K.E.H Gilbert, K.M. Jones, M.J. Heben: “Defect-activated Raman D-Band in Pure Bulk Carbon Single-Wall Nanotubes”, submitted to Phys. Rev. B. [PU]

M.J. Heben, T.J. Hendricks: “Carbon Nanotube Heat-Exchange Systems” patent application [PA]

A.C. Dillon, T. Gennett, M.J. Heben: “Single-Wall Carbon Nanotubes for Hydrogen Storage or Superbundle Fromation” patent application filed 04/02 [PA]

A.C. Dillon, T. Gennett, M.J. Heben: "Metal-Doped Single-Walled Carbon Nanotubes and Production Thereof" patent application filed 07/02 [PA]

G.L. Hornyak, L. Grigorian, A.C. Dillon, M.J Heben: “Continuous CVD Growth of Single-wall Carbon Nanotubes” patent application filed 04/02 [PA]

A.C. Dillon, A.H Mahan, J.L. Alleman, M.J. Heben, P.A. Parilla, K.M. Jones: “Hot Wire Chemical Vapor Deposition of Carbon Nanotubes” Thin Sol. Films, in press [PU]

A.C. Dillon, A.H Mahan, J.L. Alleman, M.J. Heben, P.A. Parilla, K.M. Jones: “Hot Wire Chemical Vapor Deposition of Carbon Nanotubes” 2nd International Conference on Cat-CVD (Hot-Wire CVD) Process, Denver, CO, USA, Sept. 2002 [PR]

A. H. Mahan, J.L. Alleman, M.J. Heben, P.A. Parilla, K.M. Jones, A.C. Dillon: “Hot Wire Production of Isolated Carbon Single-wall Nanotubes”, Appl. Phys. Lett., **81** (2002) 4061-4063 [PU]

G. L. Hornyak, L. Grigorian, A.C. Dillon, P.A. Parilla, K.M. Jones, M. J. Heben: “A Temperature Window for CVD Growth of Single-wall Carbon Nanotubes,” J. Phys. Chem. B, **106** (2002) 2821 [PU]

L. Lafi, D. Cossement, R. Chahine, “Effect of Inorganic Chemicals on the Stability and Porosity of HiPco Single-Wall Carbon Nanotubes”, submitted for publication in J. Phys. Chem. (2003) [PU]

A.C. Dillon, P.A. Parilla, J.L. Alleman, A.H. Mahan, K.E.H. Gilbert, K.M. Jones, M.J. Heben : "Enhancing Hydrogen Adsorption by Metal Incorporation in Carbon Multi-Wall Nanotubes Produced by Continuous Hot Wire Chemical Vapor Deposition", Materials and Technology for Hydrogen Economy (Materials Research Society Symposium Proceedings Vol. 801) 167-172 (2004) [PR + PU]

A.C. Dillon, A.H. Mahan, P.A. Parilla, J.L. Alleman, M.J. Heben, K.M. Jones, K.E.H. Gilbert : "Continuous Hot Wire Chemical Vapor Deposition of High-Density Carbon Multiwall Nanotubes". Nano Letters **3**, 1425-1429 (2003). [PR]

T. Gennett, B.J. Landi, J.M. Elich, K.M. Jones, J.L. Alleman, P. Lamarre, R.S. Morris, R.P. Raffaelle, M.J. Heben: "Fuel Cell Applications of Nanotube-Metal Supported Catalysts", Solid State Ionics - 2002. Symposium (Mater. Res. Soc. Symposium Proceedings Vol.756), 379-384 (2003). [PR + PU]

M.J. Heben, A.C. Dillon, K.E.H. Gilbert, P.A. Parilla, T. Gennett, J.L. Alleman, G.L. Hornyak, K.M. Jones : "Assessing the Hydrogen Adsorption Capacity of Single-Wall Carbon Nanotube/Metal Composites", AIP Conference Proceedings no.671, 77-89 (2003). [PR + PU]

A.C. Dillon, A.H. Mahan, J.L. Alleman, M.J. Heben, P.A. Parilla, K.M. Jones : "Hot-Wire Chemical Vapor Deposition of Carbon Nanotubes". Thin Solid Films, **430** (2003) 292-295 [PU]

A.H. Mahan, J.L. Alleman, M.J. Heben, P.A. Parilla, K.M. Jones, A.C. Dillon. "Hot Wire Chemical Vapor Deposition of Isolated Carbon Single-Walled Nanotubes". Applied Physics Letters **81** (2002) 4061-4063 [PU]

B.J. Landi, R.P. Raffaelle, M.J. Heben, J.L. Alleman, W. VanDerveer, T. Gennett. "Single Wall Carbon Nanotube-Nafion Composite Actuators", Nano Letters **2**, 1329-1332 (2002). [PU]

Y. Zhao, Y.-H, Kim, A.C. Dillon, M.J. Heben, S.B. Zhang "Towards 9 wt%, Reversible, Room Temperature Hydrogen Adsorbents: Hydrogen Saturated Organometallic Bucky Balls", submitted to Phys. Rev. Lett. (2005) [PU]

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B.J. Landi, R.P. Raffaelle, M.J. Heben, J.L. Alleman, W. VanDerveer, T. Gennett. "Development and Characterization of Single Wall Carbon Nanotube-Nafion Actuators", to appear in Materials Science and Engineering B (2004). [PU]

P. Liu, Se-H. Lee, Y. Yan, T. Gennett, B.J. Landi, A.C. Dillon, M.J. Heben : "Electrochemical Transformation of SWNT/Nafion Composites", Electrochemical and Solid-State Letters **7** (2004) A421-A424 [PU]

A.C. Dillon, P.A. Parilla, J.L. Alleman, A.H. Mahan, K.E.H. Gilbert, K.M. Jones, M.J. Heben: "Enhancing Hydrogen Adsorption by Metal Incorporation in Carbon Multi-Wall Nanotubes Produced by Continuous Hot Wire Chemical Vapor Deposition", Materials and Technology for Hydrogen Economy (Materials Research Society Symposium Proceedings Vol. 801) 167-172. (2004) [PR + PU]

Y.-H. Kim, Y. Zhao, M. J. Heben, S. B. Zhang : "Generalized Kubas Complexes as a Novel Means for Room Temperature Molecular Hydrogen Storage", to be published in Hydrogen Storage Materials (Materials Research Society Symposium Proceedings Vol. xxx) (2005). [PR + PU]

Y. Zhao, Y.-H. Kim, S. B. Zhang, J.L. Blackburn, A.C. Dillon, P.A. Parilla, A.H. Mahan, J.L. Alleman, K. M. Jones, T. Gennett, K.E.H. Gilbert, Y-W. Lee, B.M. Clemens, M.J. Heben: "Discovering the Mechanism of Hydrogen Adsorption on Aromatic Carbon Nanostructures to Develop Adsorbents for Vehicular Applications", to be published in Hydrogen Storage Materials (Materials Research Society Symposium Proceedings Vol. xxx) (2005). [PR + PU]

Y-W. Lee, R. Deshpande, A.C. Dillon, M. Heben, H. Dai, B. Clemens: "Hydrogen Adsorption Mechanism in Carbon Nanotubes and the Role of the Metal Catalyst", to be published in Hydrogen Storage Materials (Materials Research Society Symposium Proceedings Vol. xxx) (2005). [PR + PU]

T. Gennett, C. Curtis, J.L. Blackburn, K.M. Jones, J.L. Alleman, A.C. Dillon, M.J. Heben: "Hydrogen Adsorption Properties of Single Wall Carbon Nanotube-Organometallic Hybrid Materials", to be published in Hydrogen Storage Materials (Materials Research Society Symposium Proceedings Vol. xxx) (2005). [PR + PU]

Y. Zhao, Y.-H. Kim, A.C. Dillon, M.J. Heben, S.B. Zhang: "Interaction of Hydrogen with Carbon Based Molecules Through Transition Metal Atoms", to be published in Hydrogen Storage Materials (Materials Research Society Symposium Proceedings Vol. xxx) (2005). [PR + PU]

Project C-2. Hydrogen storage in carbon nanotubes (T. Mays [UK])

Project no longer active.

E. Alain, Y.-F. Yin, T.J. Mays, B. McEnaney: "Molecular simulations and measurement of adsorption in porous carbon nanotubes", Stud. Surf. Sci. Catal., **128** (2000) 313-322 [PU]

Y.-F. Yin, T.J. Mays, B. McEnaney: "Molecular simulations of hydrogen storage in carbon nanotube arrays", Langmuir, **16** (2000) 10521-10527 [PU]

B. McEnaney, E Alain, Y.-F. Yin, T.J. Mays: "Porous carbons for gas storage and separation", In Design and Control of Structure of Advanced Carbon Materials for Enhanced Performance (B. Rand, S.P. Appleyard, M.F. Yardim, Eds.), Kluwer, Dordrecht (2001) pp.295-318 [PU]

P.M. Barata-Rodrígues, G.D. Moggridge:, T.J. Mays, N.A. Seaton: "Development of adsorbent carbons using inorganic templates", In Fundamentals of Adsorption–7 (K. Kaneko, Ed.)., IK International, Tokyo (2002) pp.215-222 [PU]

T.J. Mays, E. Alain, Y.-F. Yin: "Adsorption and structure in carbon nanotubes", In Fundamentals of Adsorption–7, (K. Kaneko, Ed.), IK International, Tokyo (2002) pp.893-990 [PU]

P.M. Barata-Rodrígues, T.J. Mays, N.A. Seaton, G.D. Moggridge: "Comparison of porous carbons developed via templating approaches", Stud. Surf. Sci. Catal. **144** (2002) 139-146 [PU]

Project C-3. High pressure X-ray diffraction measurements of hydrogen in nano-structured carbon (P. Hall [UK])

Project no longer active.

Project C-5. Hydrogen storage in carbon-based materials (R. Jones [UK])

D.J. Browning, M.L. Gerrard, J.B. Lakeman, I.M. Mellor, R.J. Mortimer, M.C. Turpin: "The use of carbon nanofibres as hydrogen storage materials", Proc. 39th Power Sources conf., Cherry Hill, NJ, June 12-15, 2000, pp. 192-194 [PR+PU]

D.J. Browning, M.L. Gerrard, J.B. Lakeman, I.M. Mellor, R.J. Mortimer, M.C. Turpin: "Investigation of the hydrogen storage capacities of carbon nanofibres prepared from an ethylene precursor", Hydrogen Energy Progress XIII, Proc. 13th World Hydrogen Energy Conference, Beijing, June 11-15, 2000 [PR+PU]

D.J. Browning, M.L. Gerrard, J.B. Lakeman, I.M. Mellor, R.J. Mortimer, M.C. Turpin: “Studies into the storage of hydrogen in carbon nanofibres: proposal of a possible reaction mechanism”, Nanoletters, **2** (2003) 201-205 [PU]

M. Turpin, I. Mellor, R.A. Shatwell, C. Prentice, D.J. Browning, J.B. Lakeman, M.L. Gerrard, R.J. Mortimer: “Hydrogen storage in carbon nanofibres for defence applications: the influence of growth parameters on graphitic quality and storage capacity”, Proc. 14th World Hydrogen Energy Conf., Montreal, June 9-13, 2002 [PR+PU]

R.A. Shatwell: "Hydrogen storage in carbon nanostructures", in "Fuel Cells for Automotive Applications", ed. R.H. Thring, Professional Engineering Publishing, Bury St Edmonds, UK ISBN 1 86058 423 3 [PU]

Project C-6. Modified carbon nanotubes for hydrogen storage (R. Zidan [USA])

R. Zidan: “Doped Carbon Nanotubes for Hydrogen Storage”, Proceedings of the 2002 U.S. DOE Hydrogen and Fuel Cells Program Annual Program/Lab R&D Review, Golden, May 6-10, 2002, Report NREL/CP 610-32405 [PR+PU]

R. Zidan: “Doped Carbon Nanotubes for Hydrogen Storage”, Proceedings of the 2003 DOE Hydrogen Program Review [PR+PU]

B. Sadanadan, T. Savage, S. Bhattacharya, T. Tritt, A. Cassell, M. Meyyappan, Z.R. Dai, Z.L. Wang, R. Zidan, A.M.Rao: “Synthesis and Thermoelectric Power of Nitrogen Doped Carbon Nanotubes”, Journal of Nanoscience and Nanotechnology, **3** (1) (2003) 99–103 [PU]

H.W. Brinks, B.C. Hauback, C.M. Jensen, R. Zidan: “Synthesis and Crystal Structure of Na_2LiAlD_6”, J. of Alloys and Compounds, in press [PU]

J. Wang, A.D. Ebner, R. Zidan and J.A. Ritter: “Synergistic Effects of co-Dopants on The Dehydrogenation Kinetics of Sodium Aluminum Hydride”, J. of Alloys and Compounds, in press [PU]

J. Wang, A.D. Ebner, T. Prozorov, R. Zidan, J.A. Ritter: “Effect of graphite as a co-dopant on the dehydrogenation and hydrogenation kinetics of Ti-doped sodium aluminum hydride”, Journal of Alloys and Compounds, in press [PU]

Project C-8. Enhancing the hydrogen storage capacity of carbon nanofibres (G. Walker [UK])

M. Bououdina, D.G. Grant, G.S. Walker: "Modification of Carbon Nanofibres", International Symposium on Metal Hydrogen Systems (MH2002), Annecy, France, 1-6 September 2002 [PR]

G. S. Walker, “The Growing Interest in Nanostructured Carbons”, East Midlands Materials Society Symposium, Nottingham, UK, 2004 [PR]

M. Bououdina, D. M. Grant and G. S. Walker, “Synthesis and H_2 Adsorption on Graphitic Nanofibres”, International Symposium on Metal Hydrogen Systems (MH2004), Krakow, Poland, 2004 [PR]

M. Bououdina, D. M. Grant and G S Walker, “Review on Hydrogen Absorbing Materials – Structure, Microstructure and Thermodynamic properties”, Ukraine, 2004 [PR]

G. S. Walker, “Nanostructured Materials for Hydorgen Storage”, 2nd UK-Japan Hydrogen Workshop, Birmingham, UK, 2004 [PR]

H. Edwards, M. Fay, M. Bououdina, D. H. Gregory, G. S. Walker and P. D. Brown, “Structural characterisation of carbon nanotubes in the presence of a Ni catalyst”, Proc. Electron Microscopy and Analysis 2003, IoP Conf. Series No. 179, 477-450 (2003) [PU]

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Project C-9. Hydrogen storage in single wall carbon nanotubes (M.T. Martínez, [Spain])

A. Ansón, M.A. Callejas, A.M. Benito, W.K. Maser, J. Jagiello, M. Thommes, J.B. Parra, M.T. Martínez: “Effects of an oxidative process on hydrogen adsorption in single walled carbon nanotubes”, Cabon 2003 Conference, Oviedo (Spain) [PR]

A. Ansón, M.A. Callejas, A.M. Benito, W.K. Maser, M. Benham, J. Jagiello, A. Züttel, M.T. Martínez. “Hydrogen adsorption on a single-walled carbon nanotube material: A comparative study of three different adsorption techniques”**.** Trends in Nanotechnology 2003. Salamanca (Spain), September, 2003 [PR]

M.A. Callejas, A. Ansón, A.M. Benito, W. Maser, J.L.G. Fierro, M.L. Sanjuán and M.T. Martínez: “Enhanced hydrogen adsorption on single wall carbon nanotubes by sample reduction”. E-MRS Spring Meeting 2003. Strasburg (France) June, 2003 [PR]

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A. Ansón, M.A. Callejas, A.M. Benito, W.K. Maser, J. Jagiello, M. Thommes, J.B. Parra, M.T. Martínez: “Effects of an oxidative process on hydrogen adsorption in single walled carbon nanotubes”, CARBON, 2004, 1237-1241 [PU]

A. Ansón, J. Jagiello, J. B. Parra, M. L. Sanjuán, A. M. Benito, W. K. Maser, and M. T. Martínez: “Porosity, surface area, surface energy and hydrogen adsorption in nanostructured carbons”, JOURNAL OF PHYSICAL CHEMISTRY B , 2004, **103** (40) 15820-15826 [PU]

A. Ansón, M.A. Callejas, A.M. Benito, W.K. Maser, M. Benham, J. Jagiello, A. Züttel, M.T. Martínez: “Hydrogen adsorption on a single-walled carbon nanotube material: A comparative study of three different adsorption techniques, NANOTECHNOLOGY, 2004, **15**, 1503-1508 [PU]

Project C-10. Nanostructured carbons for hydrogen storage (N. Gallego [USA])

N.C. Gallego, T.D. Burchell, A.M. Clark: “Carbon Materials for Hydrogen Storage”, Carbon 2004: An International Conference on Carbon, Providence, RI, July 11-16, 2004 [PR]

N.C. Gallego, T.D. Burchell: “Carbon Materials for Hydrogen Storage: Current Research at ORNL”, Workshop on Porous Carbons in Energy Applications, organized by the Center for Applied Energy Research, University of Kentucky, Lexington, KY, July 7-9, 2004 (Invited) [PR]

N.C. Gallego, T.D. Burchell: “Carbon Materials for Hydrogen Storage,” ANS/ENS International Winter Meeting, New Orleans, LA, November 16-20, 2003 [PR]

Combined Hydride + Carbon Projects

Project HC-1. H-storage in nano-structured carbon-related materials and hydrides (H. Fujii) [Japan])

S. Orimo, F. Kimmerle, G. Majer: "Hydrogen in nanostructured vanadium-hydrogen systems", Physical Review B, **63** (2001) 094307 (10 pages) [PU]

S. Orimo, H. Fujii: "Materials science of Mg-Ni-based new hydrides", Applied Physics A **72**, (2001) 167-186 [PU]

S. Orimo, T. Matsushima, H. Fujii, T. Fukunaga, G. Majer: “Hydrogen desorption property of the mechanically prepared nanostructured graphite”, J. Appl. Phys., **90** (2001) 1545-1549 [PU]

T. Fukunaga, K. Itoh, S. Orimo, M. Aoki, H. Fujii: “Location of deuterium atoms absorbed in nanocrystalline graphite prepared by mechanical alloying”, J. Alloys and Compounds, **327** (2001) 224-229 [PU]

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P. Wang, S. Orimo, T. Matsushima, H. Fujii, G. Majer: “Hydrogen in mechanically prepared nanostructured h-BN: a critical comparison with that in nanostructured graphite”, Appl. Phys. Lett., **80** (2002) 318-320 [PU]

Y. Kitano, K. Yamada, T. Matsushima, S. Orimo, H. Fujii, H.: “Electron microscopy and hydriding properties of $MgYNi_4$ synthesized by mechanical alloying”, J. Alloys and Compounds, **330-332** (2002) 292-295 [PR+PU]

K. Higuchi, K. Yamamoto, H. Kajioka, M. Honda, S. Orimo, H. Fujii: “Remarkable hydrogen storage properties in three-layered Pd/Mg/Pd thin films”, J. Alloys and Compounds, **330-332** (2002) 526-530 [PU]

K. Yamamoto, K. Higuchi, H. Kajioka, M. Honda, H. Sumida, S. Orimo, H. Fujii: “Optical transmission of magnesium hydride thin film with characteristic nanostructure”, J. Alloys and Compounds, **330-332** (2002) 352-356 [PU]

H. Fujii, S. Munehiro, K. Fujii, S. Orimo: “Effect of mechanical grinding under Ar and H_2 atmospheres on structural and hydriding properties in $LaNi_5$“, J. Alloys and Compounds, **330-332** (2002) 747-751 [PR+PU]

T. Fukunaga, K. Itoh, S. Orimo. H. Fujii: “Structural observation of energy storage materials prepared by MA”, Physica B **311** (2002) 95-101 [PU]

S. Orimo, T. Matsushima, P. Wang, H. Fujii, T. Funanaga, G. Majer, A. Züttel, L. Schlapbach” Hydrogen in Carbon Nanostructures”, International Symposium on Metal Hydrogen Systems (MH2002), Annecy, France, 1-6 September 2002 [PR]

H. Fujii, K. Higuchi, K. Yamamoto, H. Kajioka, S. Orimo, K. Toiyama: “Remarkable hydrogen storage, structural and optical properties in multi-layered pd/Mg thin films”, Mater. Trans. **43** (2002) 2721-2727 [PU]

Y. Nakamori, S. Orimo, T. Ekino, H. Fujii: “Synthesis of the binary intermetallic superconductor MgB_2 under hydrogen pressure”, J. Alloys and Compounds **335** (2002) L21-L24 [PU]

S. Orimo, A. Züttel, L. Schlapbach, G. Majer, T. Fukunaga, H. Fujii: “Hydrogen interaction with carbon nanostructures: current situation and future prospects”, International Symposium on Metal Hydrogen Systems (MH2002), J. Alloys and Compounds **356-357** (2003) 716-719 [PR+PU]

N. Hanada, S. Orimo, H. Fujii: “Hydriding properties of ordered-/disordered-Mg based ternary Laves phase structures”, International Symposium on Metal Hydrogen Systems (MH2002), J. Alloys and Compounds, **356-357** (2003) 429-432 [PR+PU]

K. Itoh, Y. Miyahara, S. Orimo, H. Fujii, T. Kamiyama, T. Fukunaga: “The local structure of hydrogen storage nanocrystalline graphite by neutron scattering, International Symposium on Metal Hydrogen Systems (MH2002), J. Alloys and Compounds, **356-357** (2003) 608-611

G. Majer, E. Stanik, S. Orimo: “NMR studies of hydrogen motion in nanostructured hydrogen-graphite systems, J. Alloys and Compounds, to be published [PU]

H. Fujii and S. Orimo; Hydrogen storage properties in nano-structured magnesium and carbon-related materials. Physica B **328** (2003) 77-80 [PU]

P. Wang, S. Orimo, K. Tanabe, H. Fujii: “Hydrogen in mechanically milled amorphous boron”, J. Alloys and Compounds **350** (2003) 218-221 [PU]

D. M. Chen, T. Ichikawa, H. Fujii, N. Ogita, M. Udagawa, Y. Kitano, E. Tanabe: Unusual hydrogen absorption properties in graphite mechanically milled under various hydrogen pressures up to 6 MPa. J. Alloys and Compounds **354** (2003) L5-L9 [PU]

H. Fujii, J. I. Gottward, T. Ichikawa: “Recent development on hydrogen storage systems”, Fuel Chemistry Division Preprints **47**(1) (2003) 523-524 [PU]

G. Majer, U. Eberle, F. Kimmerle, E. Stanik, S. Orimo: “Hydrogen diffusion in metallic and nanostructured materials”, Physica B, in press [PU]

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Project H-17. Combined metal hydride and composite tanks hydrogen storage (M. Gasik [Finland])

New project.

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New project.

Project H-20. Development of metal hydrides for space flight applications (V. Yartys [Norway])

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