REFERENCES

Agarwal, R.K., Noh, J.S., Schwarz, J.A., and Davini, R. (1987) Effect of surface acidity of activated carbon on hydrogen storage. Carbon, 25, 219-226.

Biris, A.S., Birus, A.R., Lupu, D.M., Trigwell, S., Buzatu, D.A., Miller, D.W., Darsey, J.A., and Wilkes, J.G. (2004) Hydrogen Interaction with Carbon Nanofibers. Proceedings to the International Congress of Nanotechnology.

Browning, D.J., Gerrard, M.L., Lakeman, J.B., Mellor, I.M., Mortimer, R.J., and Turpin, C. (2002) Studies into the storage of hydrogen in carbon nanofibers. Nano Letters, 2(3), 201-205.

Carpetis, C. and Peshka, W. (1980) A study on hydrogen storage by use of cryoadsorbents. Hydrogen Energy, 5, 539-554.

Chamber, A., Park, C., Baker, T.K., and Rodrigues, N.M. (1998) Hydrogen storage in graphite nanofibers. Physical Chemistry B, 102(22), 4253-4256.

Chen, P., Wu, X., Lin, J., and Tan, K.L. (1999) High hydrogen uptake by alkali-doped carbon nanotubes under ambient pressure and moderate temperatures. Science, 285(5424), 91-93.

Cheng, H.M., Yang, Q.H., and Liu, C. (2001) Hydrogen storage in carbon nanotubes. Carbon, 39, 1447-1454.

Cooper, A., Pez, G., Cheng, H., Scott, A., Fowler, D., and Abdourazak, A. (2004) Design and development of new carbon-based sorbent systems for an effective containment of hydrogen. Progress report of the 2004 U.S DOE Hydrogen Program.

Dillon, A.C., Jones, K.M., Bekkedahl, T.A., Kiang, C.H., Bethune, D.S., and Heben, M.J. (1997) Storage of hydrogen in single-walled carbon nanotubes. Nature, 386, 377-379.

Dresselhaus, M.S., Dresselhaus, G., Suguhara, K., Spain, I.L., and Goldberg, H.A. (1993) Graphite fibers and filaments. Germany: Springer-Verlag Berlin.

Dresselhaus, M.S., William, K.A., and Eklund, P.C. (1999) Hydrogen adsorption in carbon materials. Materials Research Society Bulletin, 24, 45-50.

Fan, Y.Y., Liao, B., Liu, M., Wei, Y.L., Lu, M.Q., and Cheng, H.M. (1999) Hydrogen uptake in vapor groen carbon nanofibers. Carbon, 37(10), 1649-1652.

Fukunaga, T., Nagano, K., Mizutani, U., Wakayama, H., and Fukushima, Y. (1998) Structural change of graphite subjected to mechanical milling. Non-Crystalline Solids, 232-234, 416.

Grochala, W. and Edwards, P.P. (2004) Thermal decomposition of the non-interstitial hydrides for the storage and production of hydrogen. Chemistry Review, 104, 1283-1315.

Gupta, B.K. and Srivastava, O.N. (2000) Systhesis and hydrogenation behavior of graphitic nanofibers. Hydrogen Energy, 25(9), 825-830.

Grochala, W. and Edwards, P.P. (2004) Thermal decomposition of the non-interstitial hydrides for the storage and production of hydrogen. Chemistry Review, 104, 1283-1315.

Hirscher, M., Becher, M., Haluska, M., Quintel, A., Skakalova, V., Choi, Y.M., Weglikowska, U.D., Roth, S., Stepanek, I., Bernier, P., Leonhardt, A., and Fink, J. (2002) Hydrogen storage in carbon nanostructures. Alloys and Compounds, 330-332, 654-658.

Hirscher, M., Becher, M., Haluska, M., Zeppelin, F.V., Chen, X., Weglikowska, U.D., and Roth, S. (2003) Are carbon nanostructures an efficient hydrogen storage medium? Alloys and Compounds, 356-367, 433-437.

Iijima, S. (1991) Helical microtubules of graphitic carbon. Nature, 354, 56-58.

Isobe, S., Ichikawa, T., Gottwald, J.I., Gomibuchi, E., and Fujii, H. (2004) Catalytic effect of 3d transition metals on hydrogen storage properties in mechanically milled graphite. Physics and Chemistry of Solids, 65, 535-539.

Kuznetsova, A., Yates, J.T., Liu, J., and Smalley, R.E. (2000) Physical adsorption of xenon in open single walled carbon nanotubes: Observation of a quasi-one-dimensional confined Xe phase. Chemical Physics, 112(21), 9590-9598.

Li, X., Zhu, H., Ci, L., Xu, C., Mao, Z., Wei, B., Liang, J., and Wu, D. (2001) Hydrogen uptake by graphitized multi-walled carbon annotates under moderate pressure and at room temperature. Carbon, 39, 2077-2088.

Lien, H.L. and Zhang, W.X. (2001) Nanoscale iron particles for complete reduction of chlorinated ethenes. Colloids and Surfaces, 191, 97-105.

Lueking, A.D., Yang, R.T., Rodriguez, N.M., and Baker, T.K. (2004) Hydrogen storage in graphite nanofibers: Effect of synthesis catalyst and pretreatment conditions. Langmuir, 20, 714-721.

Nijkamp, M.G., Raaymakers, J.E.M.J., Dillen, A.J., and Jong, K.P. (2001) Hydrogen storage using physisorption – materials demands. Applied Physics A, 72, 619-623.

Orimo, S., Fujii, H., and Ikeda, K. (1997) Notable hydriding properties of a nanostructured composite material of the Mg_2Ni-H system synthesized by reactive mechanical grinding. Acta Materialia, 45, 331.

Orimo, S., Majer, G., Fukunaga, T., Zuettel, A., Schlapbach, H., and Fujii, H. (1999) Hydrogen in the mechanically prepared nanostructured graphite. Applied Physics Letters, 75,3093-3095.

Park, C., Anderson, P.E., Chamber, A., Tan, C.D., Hidalgo, R., and Rodriguez, N.M. (1999) Further studies of the interaction of hydrogen with graphite nanofibers. Physical Chemistry B, 103(48), 10572-10581.

Pinkerton, F.E., Wicke, B.G., Olk, C.H., Tibbetts, G.G., Meisner, G.P., Meyer, M.S., and Herbst, J.F. (2000) Thermogravimetric measurement of hydrogen absorption in alkali-modified carbon materials. Physical Chemistry B, 103, 9460-9467.

Poirier, E., Chahine, R., and Bose, T.K. (2001) Hydrogen adsorption in carbon nanostructures. International Journal of Hydrogen Energy, 26, 831-835.

Rodriguez, N.M., Chambers, A., and Baker, R.T.K. (1995) Catalytic engineering of carbon nanostructures. Langmuir, 11(10), 3862-3866.

Sandrock, G., Suda, S., and Schlapbach, L. (1992) Activation characteristics of chemically treated. Alloys and Compounds, 190(1), 57-60.

Schlapbach, L. and Züttel, A. (2001) Hydrogen-storage materials for mobile application. Nature, 414, 335-358.

Schumacher, K., Grun, M., and Unger, K.K. (1999) Novel synthesis of spherical MCM-48. Microporous Mesoporous Materials, 27(2-3), 201-206.

Strobel, R., Jorissen, L., Schliermann, T., Trapp, V., Schutz, W., Bohmhammel, K., Wolf, G., and Garche, J. (1999) Hydrogen adsorption on carbon materials. Power Sources, 84, 221-224.

Terres, E., Panella, B., Hayashi, T., Kim, Y.A., Endo, M., Dominguez, J.M., Hirscher, M., Terrones, H., and Terrones, M. (2005) Hydrogen storage in spherical nanoporous carbons. Chemical Physics Letters, 403, 363-366.

Tibbetts, G.G., Meisner, G.P., and Olk, C.H. (2001) Hydrogen storage capacity of carbon nanotubes, filaments, and vapor-grown fibers. Carbon, 39, 2291-2301.

Yang, R.T. (2000) Hydrogen storage by alkali-doped carbon nanotubes-revisited. Carbon, 38, 623-641.

Zhou, L. (2005) Progress and problems in hydrogen storage methods. Renewable and Sustainable Energy Reviews, 9, 395-408.

Zuttel, A., Nutzenadel, Ch., Sudan, P., Mauron, Ph., Emmenegger, Ch., Rentsch, S., Schlapbach, L., Weidenkaff, A., and Kiyobayashi, T. (2001) Hydrogen sorption by carbon nanotubes and other carbon nanostructures. Alloys and Compounds, 330-332, 676-682.

APPENDICES

Appendix A The Calculated Volume of the Manifold and Sample Holder

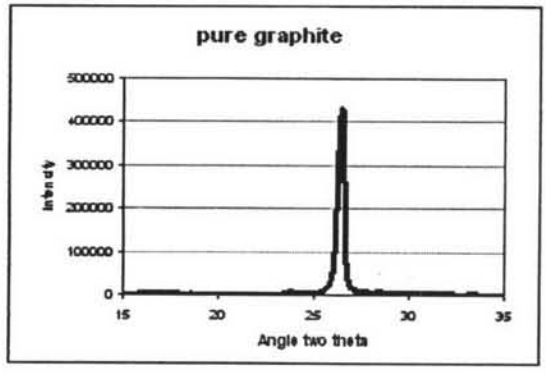
Table A1 Manifold volume estimated by gas expansion

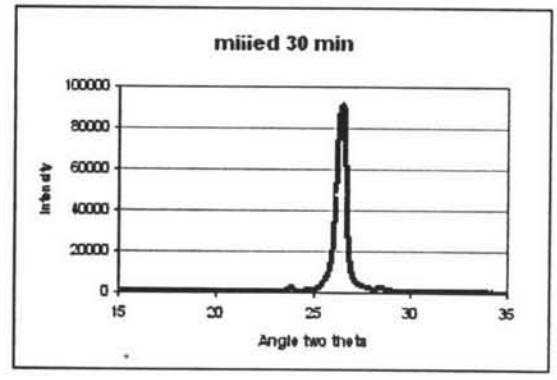
Experiment	P initial (psia)	P final (psia)	Volume (cm^3)
1	133.13	101.52	25.23
2	196.88	159.83	23.70
3	116.25	85.76	26.08
4	140.63	109.06	24.81
5	133.13	105.63	24.25
6	133.13	101.52	25.23
7	140.63	111.12	24.35
8	127.50	98.92	24.80
Average			24.81

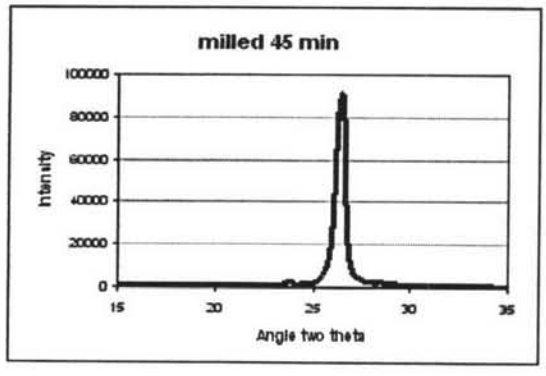
Table A2 Dead volume of the sample holder

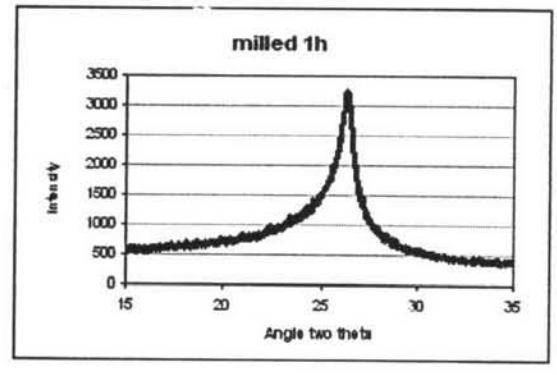
Experiment	P initial (psia)	P final (psia)	Volume (cm^3)
1	1455	675	28.66
2	1456.88	673.13	28.88
3	1261.88	586.88	28.53
4	1410	661.05	28.10
5	1393.88	649.44	28.43
6	1510	704.33	28.37
7	1393.88	649.44	28.43

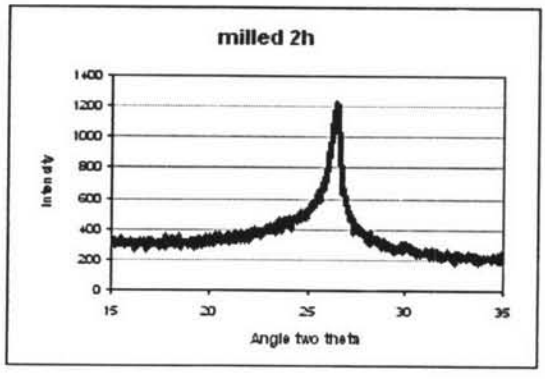
Appendix B XRD Profile of Graphite with Various Milling Time

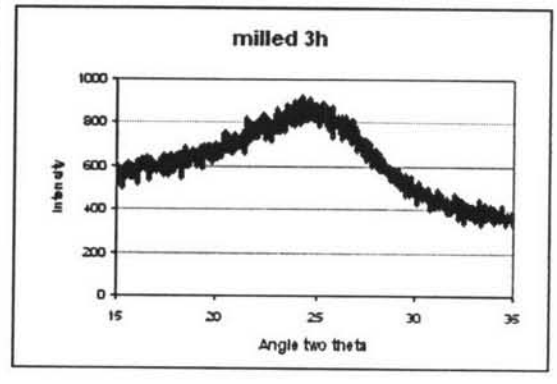


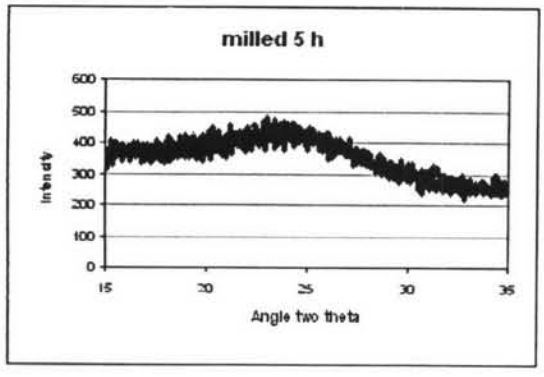


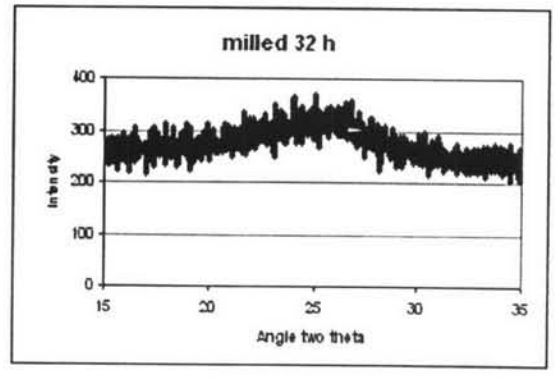












Appendix C Metal Contents in Graphite

Table C1 Trace Metals Analysis Result (wt%)

	Graphite
Al	<0.01
As	<0.01
Ca	<0.01
Co	<0.01
Cr	<0.01
Cu	<0.001
Fe	<0.01
Pb	<0.01
Mg	<0.001
Mn	<0.001
Mo	<0.001
Na	<0.01
Ni	<0.01
Si	<0.01
Sn	<0.01
Ti	<0.001
V	<0.001
Zn	<0.001
B	<0.001
Cd	<0.001
Ga	<0.002
K	<0.002
Li	<0.0002
Nb	<0.002
Pd	<0.001
Pt	<0.001
Rh	<0.001
Sb	<0.001
Sr	<0.001
Ta	<0.002
Zr	<0.001

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