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APPENDICES

Appendix A Changed Pressure during the Desorption

Table A1 Changed pressure of ball milled 2 h and 5 h of the $LiBH_4/MgCl_2$ mixture

Temperature (°C)	Pressure (psi)	
	Ball mill 2 h	Ball mill 5 h
30	0	0
60	3.75	0
90	7.5	3.7
120	15	9.375
150	16.875	11.25
180	18.75	15
210	24.375	20.625
240	28.125	22.5
270	33.75	28.125
300	48.75	45
330	56.25	52.5
360	61.875	58.125
390	67.5	63.75
420	69.375	67.5
450	75	73.125

Table A2 Changed pressure of ball milled 2 h and 5 h of 16 wt% TiO_2-$LiBH_4/MgCl_2$ mixture

Temperature (°C)	Pressure (psi)	
	Ball mill 2 h	Ball mill 5 h
30	0	0
60	3.75	1.875
90	7.5	5.625
120	13.125	9.375
150	16.875	15
180	20.625	20.625
210	26.25	26.25
240	31.875	31.875
270	37.5	41.25
300	52.5	56.25
330	60	61.875
360	63.75	63.75
390	65.625	65.625
420	67.5	67.5
450	71.25	71.25

Table A3 Changed pressure of ball milled 2 h and 5 h of 16 wt% Nb_2O_5-$LiBH_4/MgCl_2$ mixture

Temperature (°C)	Pressure (psi)	
	Ball mill 2 h	Ball mill 5 h
30	0	0
60	3.75	1.875
90	7.5	5.625
120	13.125	9.375
150	16.875	13.125
180	22.5	18.75
210	30	26.25
240	35.625	31.875
270	41.25	37.5
300	52.5	50.625
330	58.125	56.25
360	61.875	58.125
390	63.75	61.875
420	65.625	63.75
450	69.375	67.5

Table A4 Changed pressure of ball milled 2 h of 16 wt% $TiCl_3$-$LiBH_4$/$MgCl_2$ mixture

Temperature (°C)	Pressure (psi)
30	0
60	1.875
90	3.75
120	9.375
150	13.125
180	16.875
210	22.5
240	28.125
270	31.875
300	45
330	48.75
360	52.5
390	54.375
420	56.25
450	60

Table A5 Changed pressure of ball milled 2 h of 16 wt% Ti-$LiBH_4$/$MgCl_2$ mixture

Temperature (°C)	Pressure (psi)
30	0
60	1.875
90	5.625
120	9.375
150	11.25
180	15
210	15.875
240	20.625
270	25.375
300	37.5
330	45
360	48.75
390	52.5
420	54.375
450	58.125

Table A6 Changed pressure of ball milled 2 h $NbCl_5$-$LiBH_4$/$MgCl_2$ mixture

Temperature (°C)	Pressure (psi)
30	0
60	1.875
90	5.625
120	9.375
150	15
180	18.75
210	24.375
240	30
270	35.625
300	43.125
330	50.625
360	56.25
390	58.125
420	60
450	61.875

Table A7 Changed pressure of ball milled 2 h of 10 and 20 wt%TiO_2- $LiBH_4/MgCl_2$ mixture

Temperature (°C)	Pressure (psi)	
	10 wt%	**20 wt%**
30	0	0
60	1.875	1.875
90	5.625	5.625
120	7.5	7.5
150	9.375	11.25
180	13.125	15
210	18.75	22.5
240	22.5	28.125
270	31.875	35.625
300	46.875	48.75
330	54.375	58.125
360	60	61.875
390	61.875	63.75
420	67.5	65.625
450	67.375	71.25

Table A8 Changed pressure of ball milled 2 h of 10 and 20 wt%Nb_2O_5-$LiBH_4/MgCl_2$ mixture

Temperature (°C)	Pressure (psi)	
	10 wt%	**20 wt%**
30	0	0
60	1.875	1.875
90	5.625	3.75
120	9.375	5.625
150	13.125	7.5
180	15	11.25
210	22.5	18.75
240	28.125	24.375
270	33.75	31.875
300	46.875	39.375
330	52.5	45
360	58.125	52.5
390	63.75	56.25
420	65.625	60
450	71.25	63.75

Appendix B Changed Pressure after the Absorption at 350 °C for 12 h

Samples	Pressure (psi)	
	Before	After
Milled 2 h $LiBH_4/MgCl_2$	1,400 @ 26 °C	1,350 @ 26 °C
Milled 5 h $LiBH_4/MgCl_2$	1,404 @ 26 °C	1,364 @ 26 °C
Milled 2 h 16 wt% Nb_2O_5-$LiBH_4/MgCl_2$	1,333 @ 27 °C	1,327 @ 27 °C
Milled 5 h 16 wt% Nb_2O_5-$LiBH_4/MgCl_2$	1,350 @ 27 °C	1,344 @ 27 °C
Milled 2 h 16 wt% TiO_2-$LiBH_4/MgCl_2$	1,288 @ 30 °C	1,278 @ 27 °C
Milled 5 h 16 wt% TiO_2-$LiBH_4/MgCl_2$	1,316 @ 29 °C	1,325 @ 28 °C
Milled 2 h 16 wt% $TiCl_3$-$LiBH_4/MgCl_2$	1,280 @ 30 °C	1,278 @ 30 °C
Milled 2 h 16 wt% Ti-$LiBH_4/MgCl_2$	1,288 @ 29 °C	1,273 @ 30 °C
Milled 2 h 16 wt% $NbCl_5$-$LiBH_4/MgCl_2$	1,290 @ 24 °C	1,288 @ 27 °C

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Proceedings:

1. Ploysuksai W., Rangsunvigit P., and Kulprathipanja S. (2012, April 11-13) Effects of TiO_2 and Nb_2O_5 on Hydrogen Desorption of $Mg(BH_4)_2$, Poster presentation at ICCBEE 2012 : International Conference on Chemical, Biological and Environmental Engineering, Venice, Italy.
2. Ploysuksai W., Rangsunvigit P., and Kulprathipanja S. (2012, April 24) Effects of Ti and Nb on Hydrogen Desorption of $Mg(BH_4)_2$, the 3rd Research Symposium on Petrochemical and Materials Technology, and the 18th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.

Presentations:

1. Ploysuksai W., Rangsunvigit P., and Kulprathipanja S. (2012, April 11-13) Effects of TiO_2 and Nb_2O_5 on Hydrogen Desorption of $Mg(BH_4)_2$, Poster presentation at ICCBEE 2012 : International Conference on Chemical, Biological and Environmental Engineering, Venice, Italy.
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