Supplementary Information

To the article "Metal hydride hydrogen storage (compression) units operating at near-atmospheric pressure of the feed H_2", by B. Tarasov, A. Arbuzov, S. Mozhzhukhin, A. Volodin, P. Fursikov, M.W. Davids, J. Adeniran and M. Lototskyy

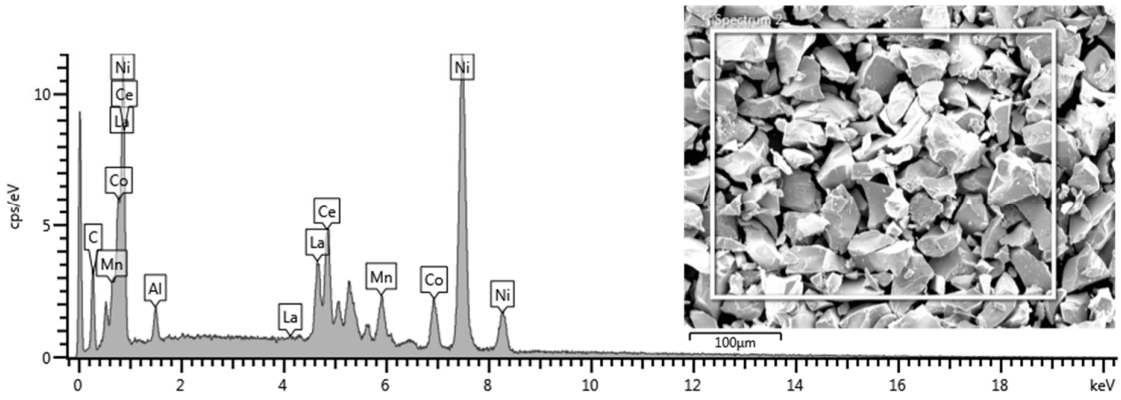
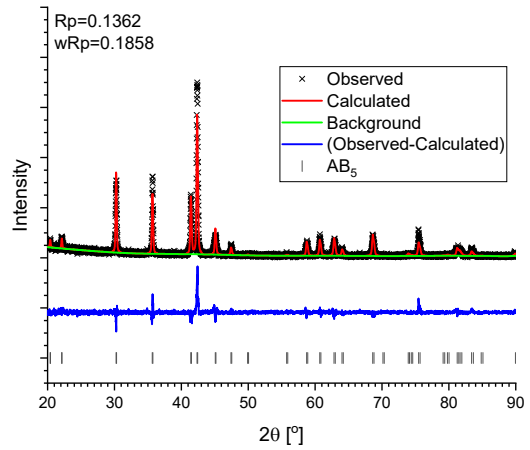


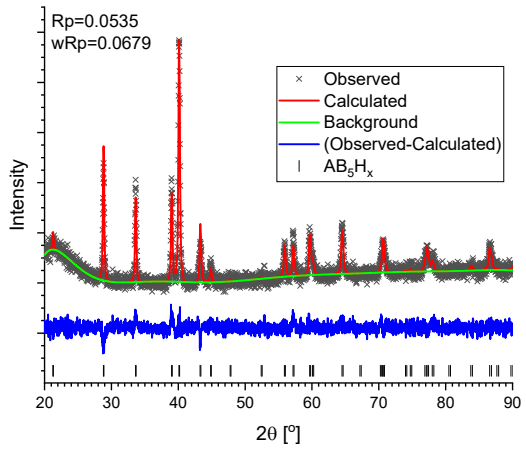
Figure S1. Energy dispersion spectrum and low magnification SEM image of the multi-component AB_5-type alloy

Table S1. Summary of EDX analysis of the multi-component AB_5-type alloy

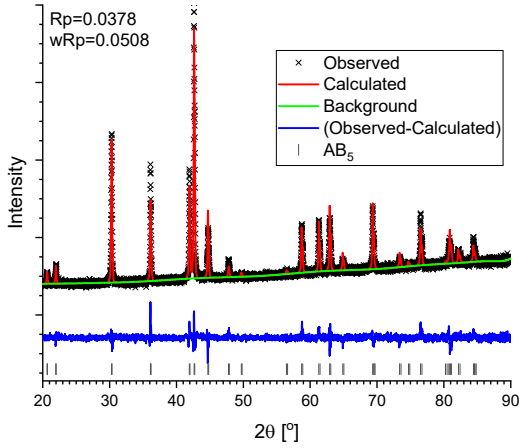
Element	**Wt%**	**Atomic %**	**Component in $AB_{5\pm x}$ (subtotal)**	**Stoichiometry in the formula**
La	13.56±0.32	6.9	A (17.0)	0.41
Ce	20.02±0.34	10.1		0.59
Ni	52.32±0.38	62.99	B (83.0)	3.71
Co	7.41±0.2	8.89		0.52
Mn	4.8±0.16	6.17		0.36
Al	1.89±0.11	4.95		0.29
Totals	*SUM=100*	*SUM=100*	*B/A=4.88*	$La_{0.41}Ce_{0.59}Ni_{3.71}Co_{0.52}Mn_{0.36}Al_{0.29}$



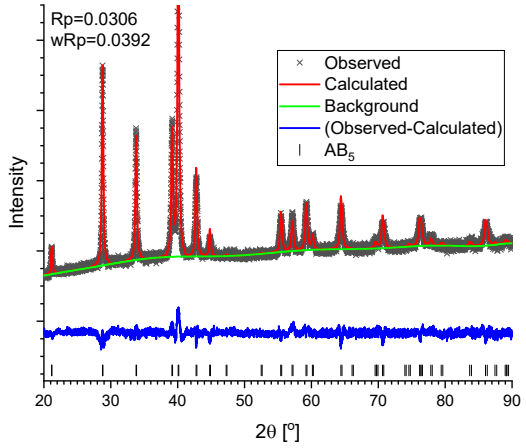
$LaNi_{4.45}Al_{0.55}$ (alloy)



$LaNi_{4.45}Al_{0.55}$ (hydride)



$La_{0.41}Ce_{0.59}Ni_{3.71}Co_{0.52}Mn_{0.36}Al_{0.29}$ (alloy)



$La_{0.41}Ce_{0.59}Ni_{3.71}Co_{0.52}Mn_{0.36}Al_{0.29}$ (hydride)

Figure S2. Refined XRD patterns of the studied samples

Table S2. Summary of Rietveld refinement of XRD patterns of the studied samples

Parameter	**Value**			
	$LaNi_{4.45}Al_{0.55}$		**$La_{0.41}Ce_{0.59}Ni_{3.71}Co_{0.52}Mn_{0.36}Al_{0.29}$**	
	Alloy	**Hydride**	**Alloy**	**Hydride**
Phase (weight fraction)	AB_5 (1.0)	AB_5H_x(1.0)	AB_5 (1.0)	AB_5H_x(1.0)
***a* [Å]**	5.0355(1)	5.3302(2)	4.97948(4)	5.34975(8)
***c* [Å]**	4.0230(1)	4.1783(3)	4.05629(6)	4.2550(1)
V [$Å^3$]	88.344(4)	102.808(8)	87.102(2)	105.462(3)
Crystallite size [nm]	300	100	100	55
Strain [%]	0	0	0	0
Preferred orientation plane	(1 1 0)	None	None	None