Supporting Information

Preparation of Alumina-Supported Intermetallic Compounds

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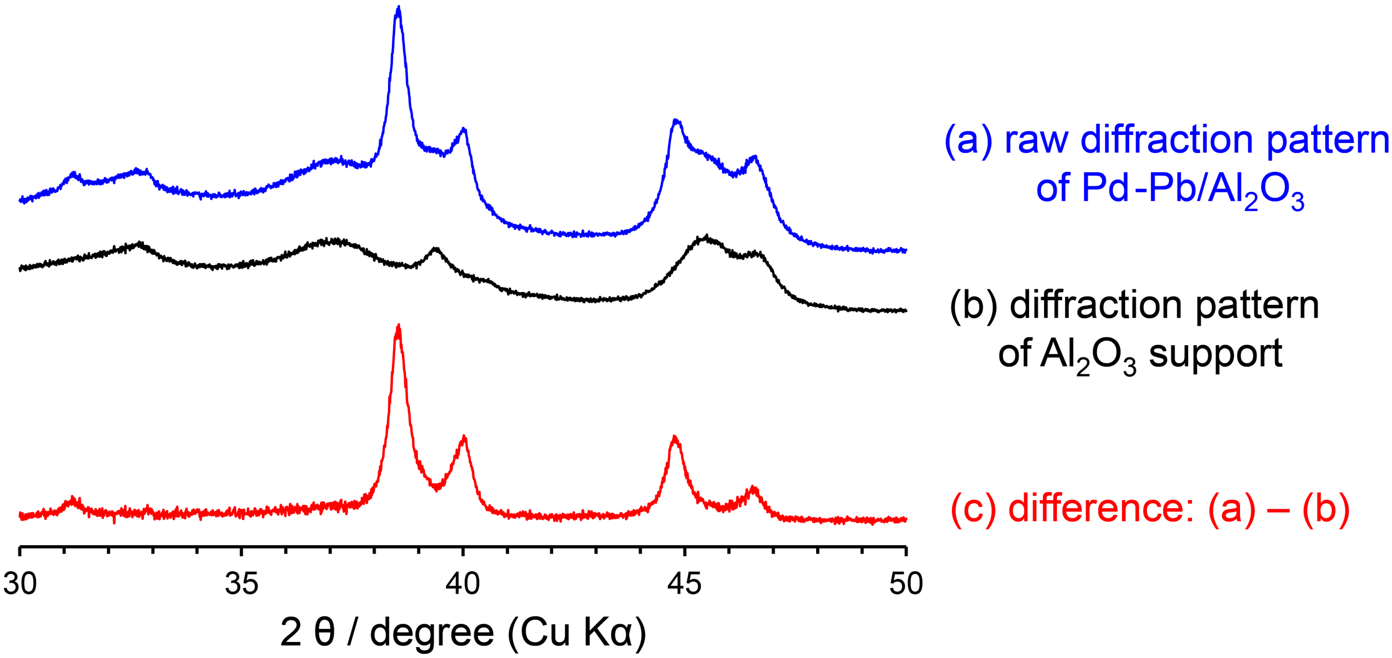

Figure S1. (a) Raw XRD pattern of Pd–Pb/Al_2O_3 (Pd/Pb = 3), (b) bare Al_2O_3 and (c) difference between (a) and (b).

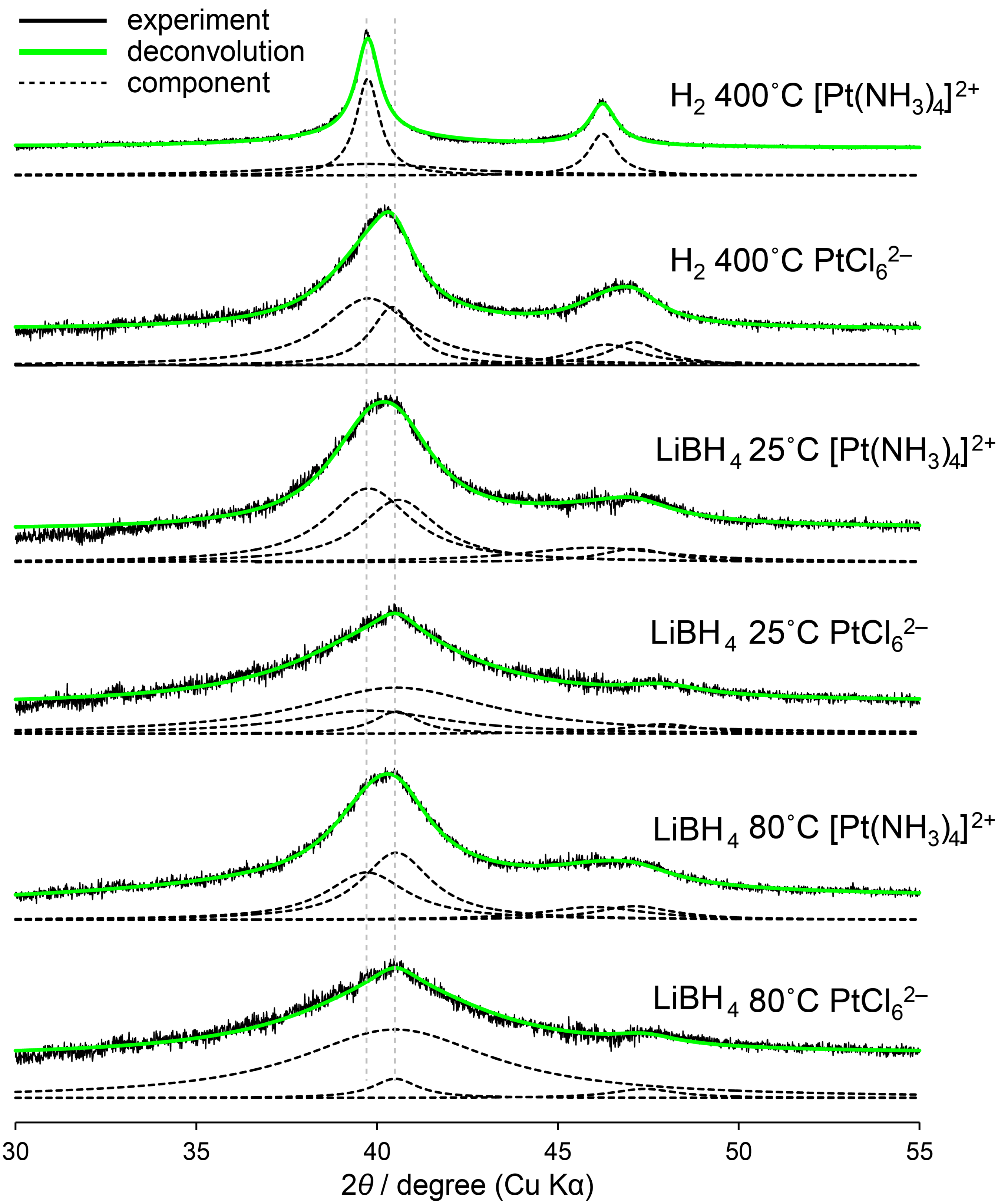

Figure S2. Peak separation of XRD patterns of Pt–Co/Al_2O_3 (Pt/Co = 3).

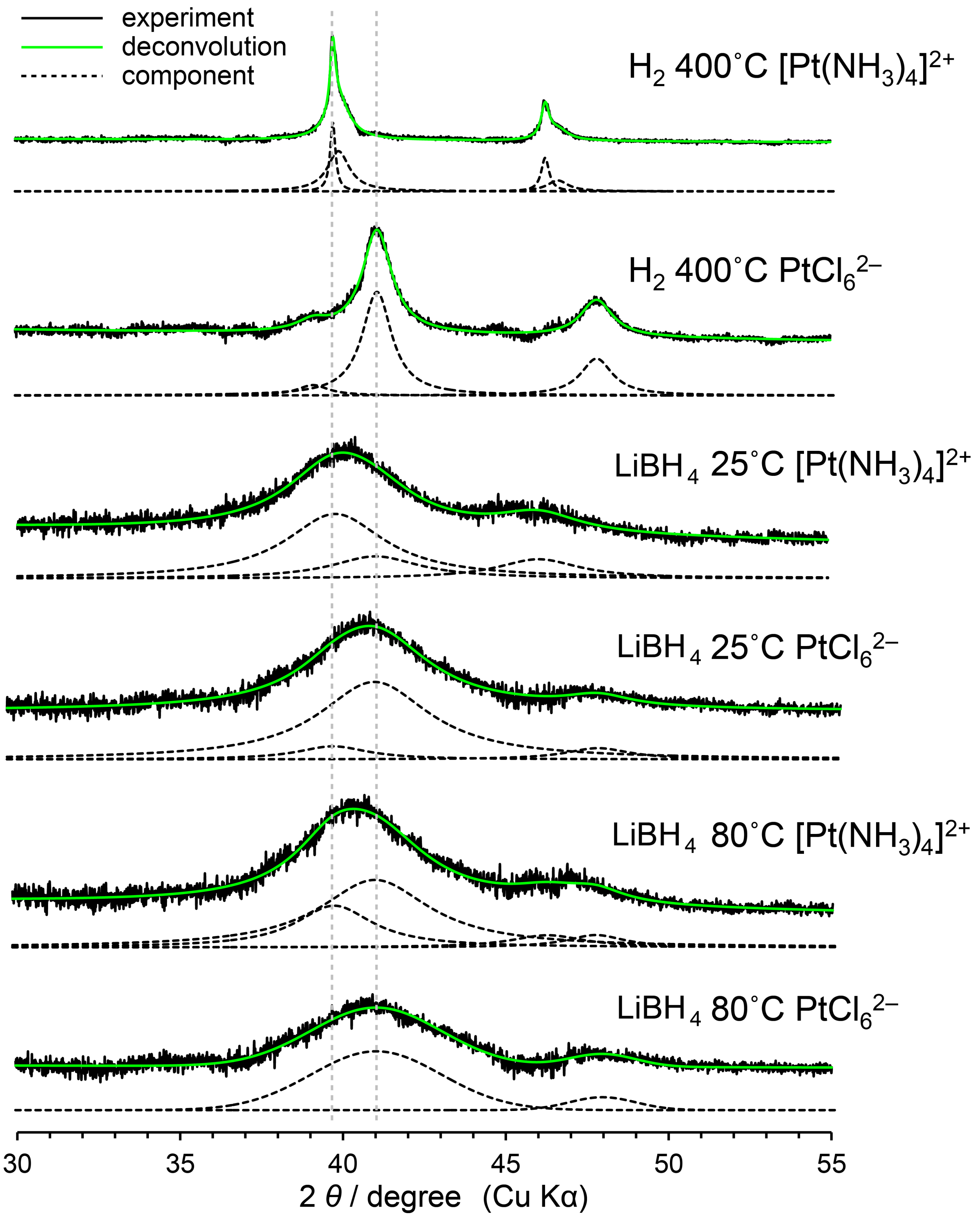

Figure S3. Peak separation of XRD patterns of Pt–Cu/Al_2O_3 (Pt/Cu = 1).

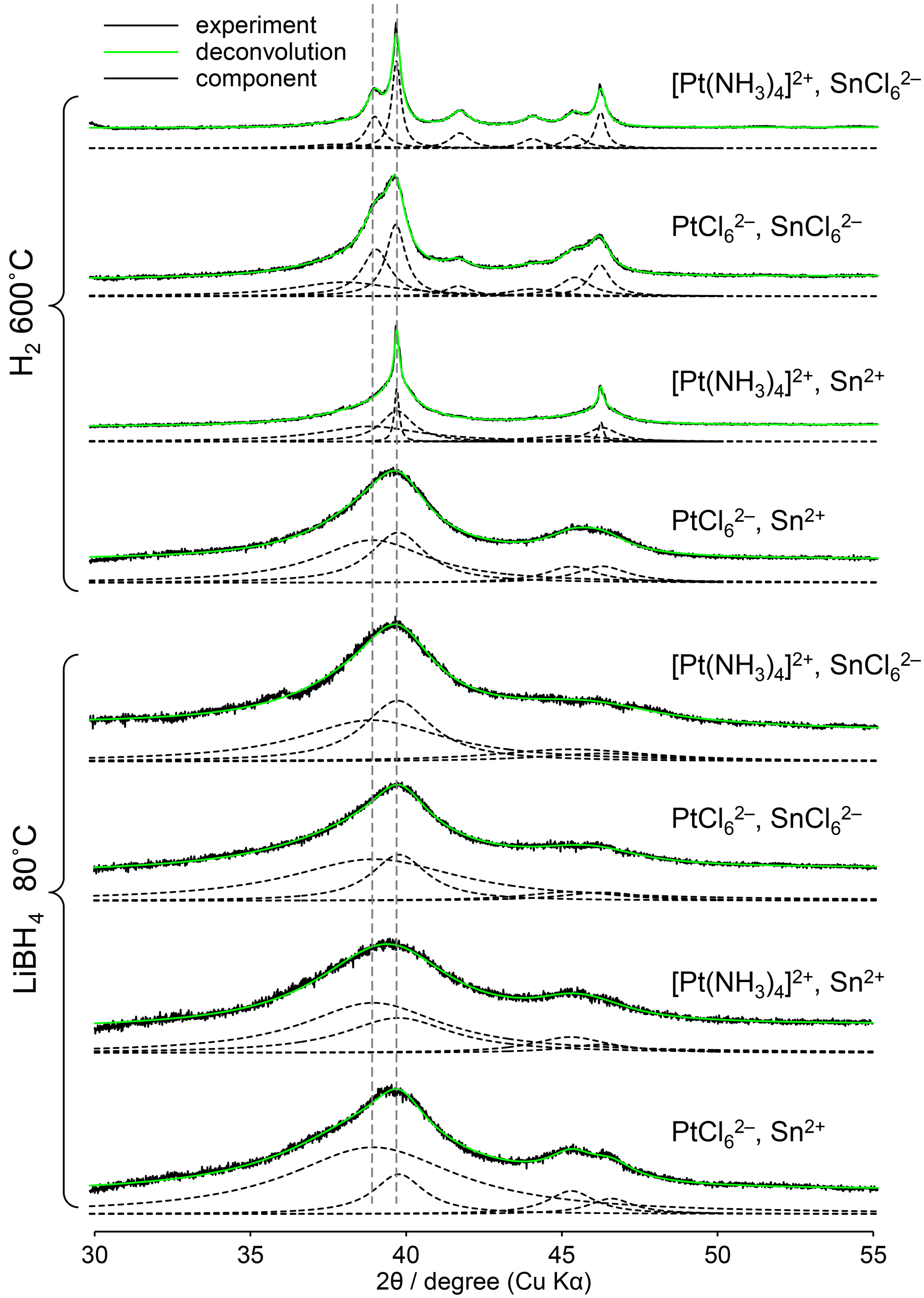

Figure S4. Peak separation of XRD patterns of Pt–Sn/Al_2O_3 (Pt/Sn = 3).

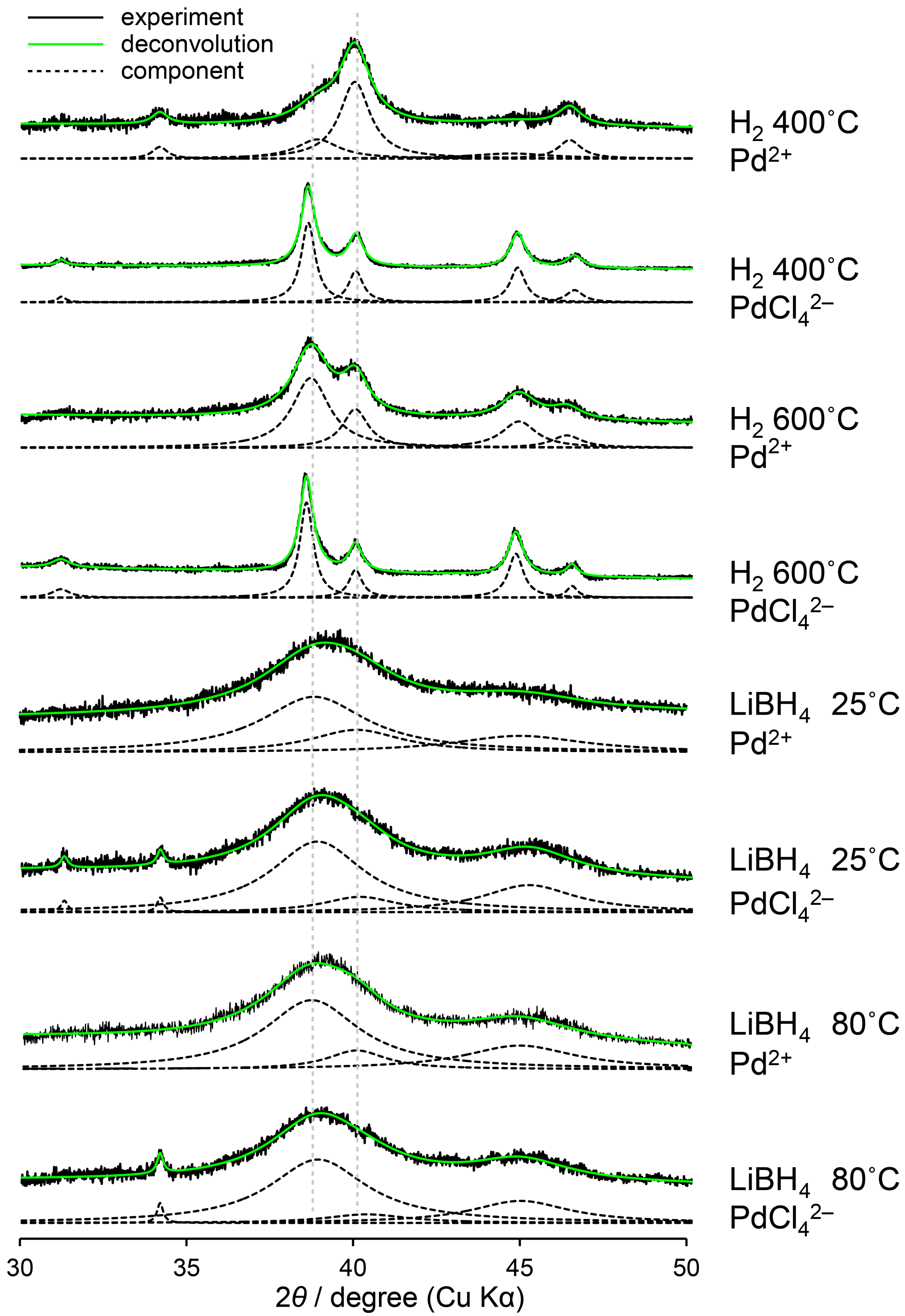

Figure S5. Peak separation of XRD patterns of Pd–Pb/Al_2O_3 (Pd/Pb = 3).

Table S1. Summary of reduction potential of metal precursor and resulted relative peak intensity.

noble metal				base metal				ΔE / V	I_{MN}	
precursor	redox couple	$E_{1/2}$ / V	ref.	precursor	redox couple	$E_{1/2}$ / V	ref.		H_2	$LiBH_4$
$PtCl_6^{2-}$	$PtCl_6^{2-}/PtCl_4^{2-}$	0.726	[1]	Cu^{2+}	$Cu^{2+}/Cu^{(0)}$	0.339	[2]	0.387	100	100
$PtCl_6^{2-}$	$PtCl_6^{2-}/PtCl_4^{2-}$	0.726	[1]	Co^{2+}	$Co^{2+}/Co^{(0)}$	–0.282	[2]	1.008	46	100
$PtCl_6^{2-}$	$PtCl_6^{2-}/PtCl_4^{2-}$	0.726	[1]	Sn^{2+}	$Sn^{2+}/Sn^{(0)}$	–0.141	[2]	0.867	46	63
$PtCl_6^{2-}$	$PtCl_6^{2-}/PtCl_4^{2-}$	0.726	[1]	$SnCl_6^{2-}$	$SnCl_4^{2-}/Sn^{(0)}$	–0.286	[3]	1.012	40	47
$PdCl_4^{2-}$	$PdCl_4^{2-}/Pd^{(0)}$	0.600	[1]	Pb^{2+}	$Pb^{2+}/Pb^{(0)}$	–0.126	[2]	0.726	72	88
$[Pt(NH_3)_4]^{2+}$	$[Pt(NH_3)_4]^{2+}/Pt^{(0)}$	1.400	[4]	Cu^{2+}	$Cu^{2+}/Cu^{(0)}$	0.339	[2]	1.061	27	62
$[Pt(NH_3)_4]^{2+}$	$[Pt(NH_3)_4]^{2+}/Pt^{(0)}$	1.400	[4]	Co^{2+}	$Co^{2+}/Co^{(0)}$	–0.282	[2]	1.682	0	59
$[Pt(NH_3)_4]^{2+}$	$[Pt(NH_3)_4]^{2+}/Pt^{(0)}$	1.400	[4]	Sn^{2+}	$Sn^{2+}/Sn^{(0)}$	–0.141	[2]	1.541	16	59
$[Pt(NH_3)_4]^{2+}$	$[Pt(NH_3)_4]^{2+}/Pt^{(0)}$	1.400	[4]	$SnCl_6^{2-}$	$SnCl_4^{2-}/Sn^{(0)}$	–0.286	[3]	1.686	27	40
Pd^{2+}	$Pd^{2+}/Pd^{(0)}$	0.915	[2]	Pb^{2+}	$Pb^{2+}/Pb^{(0)}$	–0.126	[2]	1.041	19	80

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