Supporting information

Novel Pd–Cu–Zr hydrogen separation membrane with a high tolerance to sulphur poisoning

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(a)



(b)



(c)



Figure S1 (a-d): SEM images and EDS analyses of the Pd-Cu alloy surface fabricated by cold rolling and Heat treated at 650 °C for 96 h.



(a)



(b)



Figure S2 (a–d): SEM images and EDS analyses of the Pd–Cu–Zr alloy surface fabricated by cold rolling and Heat treated at 650 °C for 96 h.

Element		Average			
	(a)	(b)	(c)	(d)	
Pd	65.55	66.27	63.79	64.69	65.075
Cu	34.45	33.73	36.21	35.31	34.925

Table S1: EDS analyses obtained from Fig. S1(a-d) for the Pd–Cu alloy fabricated by cold rolling and Heat treated at 650 °C for 96 h.

Table S2: EDS analyses obtained from Fig. S2(a-d) for the Pd–Cu–Zr alloy fabricated by cold rolling and Heat treated at 650 °C for 96 h.

Element		Average			
	(a)	(b)	(c)	(d)	
Pd	61.84	61.44	60.79	59.87	60.985
Cu	37.05	37.21	37.39	37.23	37.22
Zr	2.02	1.6	1.75	1.81	1.795