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Supporting Information

High Performance Hybrid Catalyst with Selectively Functionalized Carbon by Temperature-Directed Switchable Polymer

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Table S1. Composition of C/H/N in carbon supports and total catalysts of Pt/C and Pt/C-PNIPAM.

Material	Carbon Support			Total Catalyst		
	C [wt.%]	H [wt.%]	N [wt.%]	Pt [wt.%]	Carbon Support [wt.%]	PNIPAM [wt.%]
Pt/C	99.35	0.54	0.11	40.00	60.00	-
Pt/C-PNIPAM	98.42	0.71	0.87	38.48	57.73	3.79

Table S2. Binding energy and atomic ratio of Pt oxidation states of Pt/C and Pt/C-PNIPAM.

Material	Element	Oxidation State	Binding Energy [eV]	Ratio [%]
Pt/C	Pt 4f	Pt (0)	71.2	62.2
		Pt (II)	72.3	29
		Pt (IV)	74.6	8.8
Pt/C-PNIPAM	Pt 4f	Pt (0)	71.2	61.9
		Pt (II)	72.4	29.2
		Pt (IV)	74.6	8.9

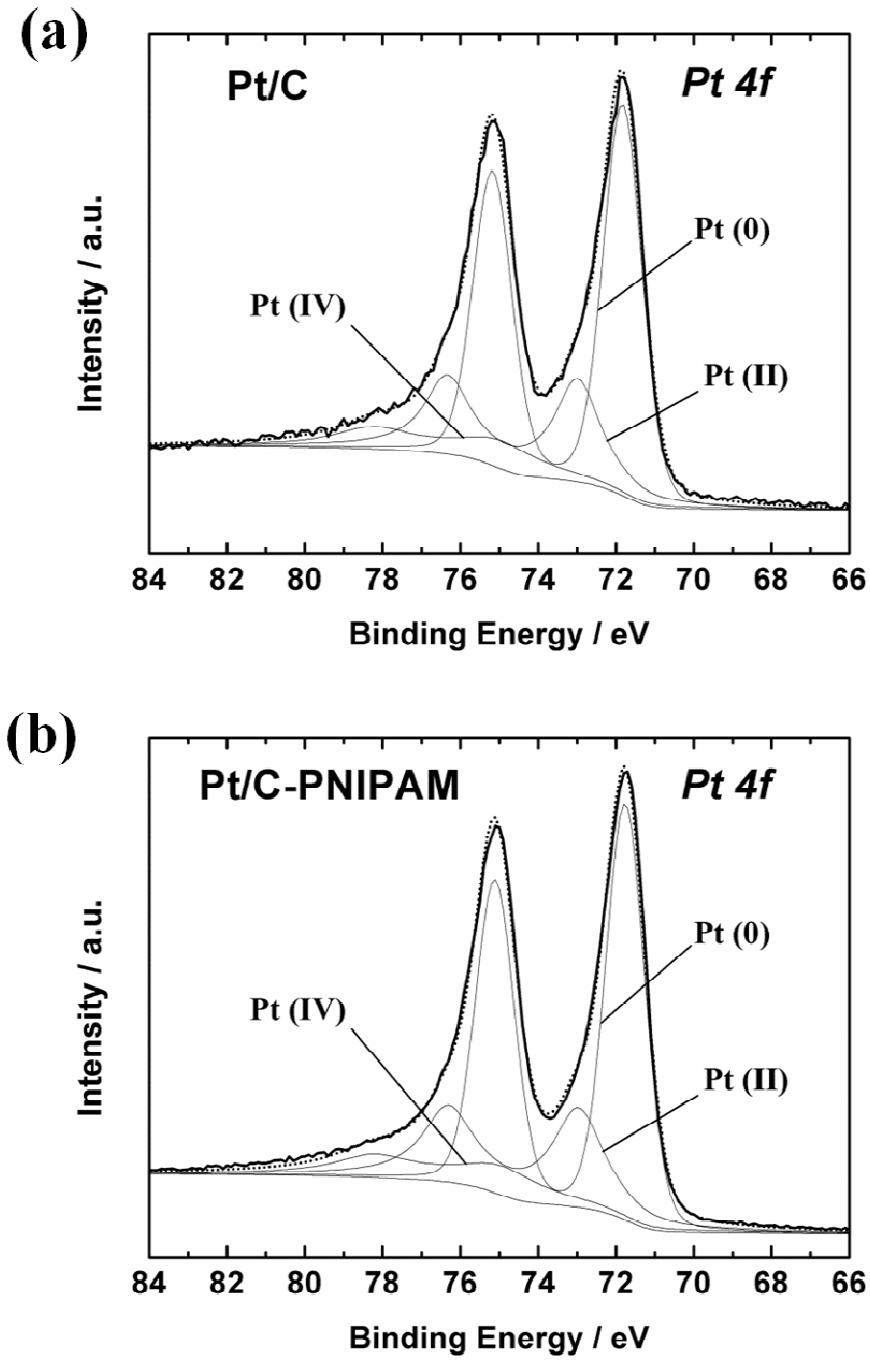

Figure S1. XPS peaks of Pt4f of (a) Pt/C and (b) Pt/C-PNIPAM.

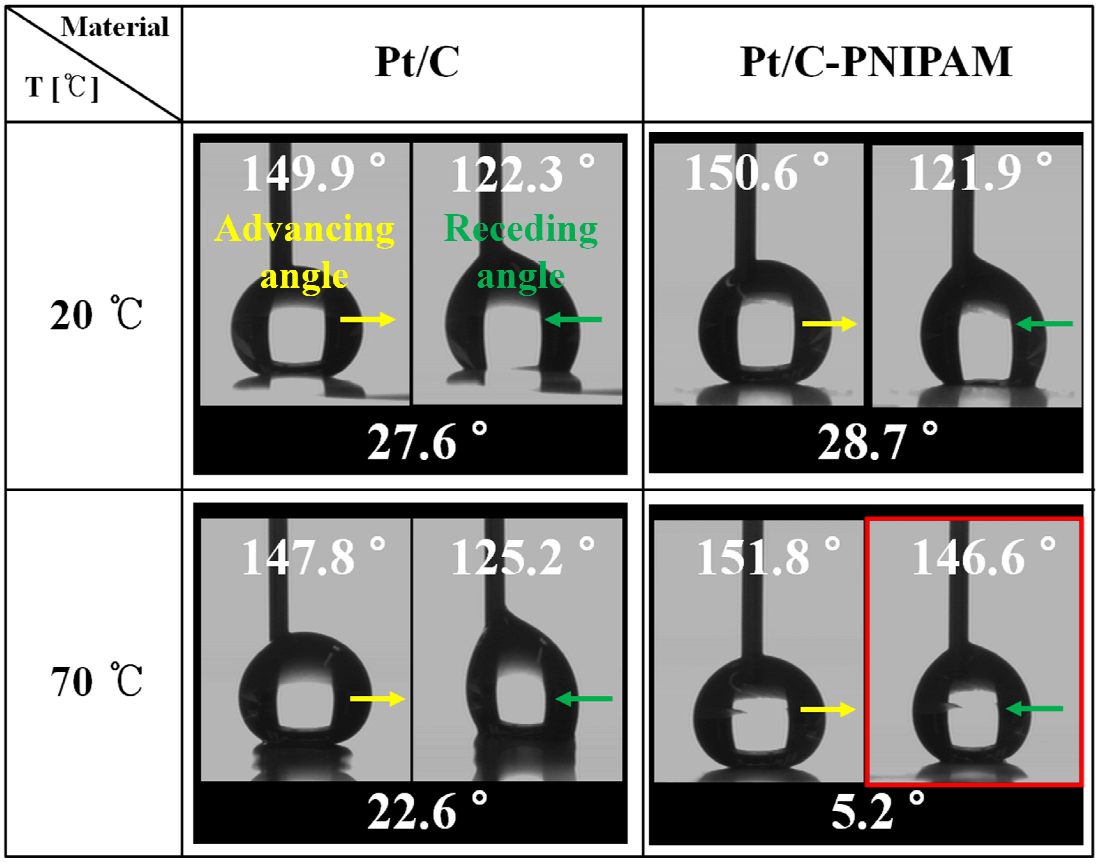

Figure S2. Photographs of advancing and receding contact angles depending on temperature and surface material. Under the photographs of water droplets, their contact angle hysteresis are indicated.

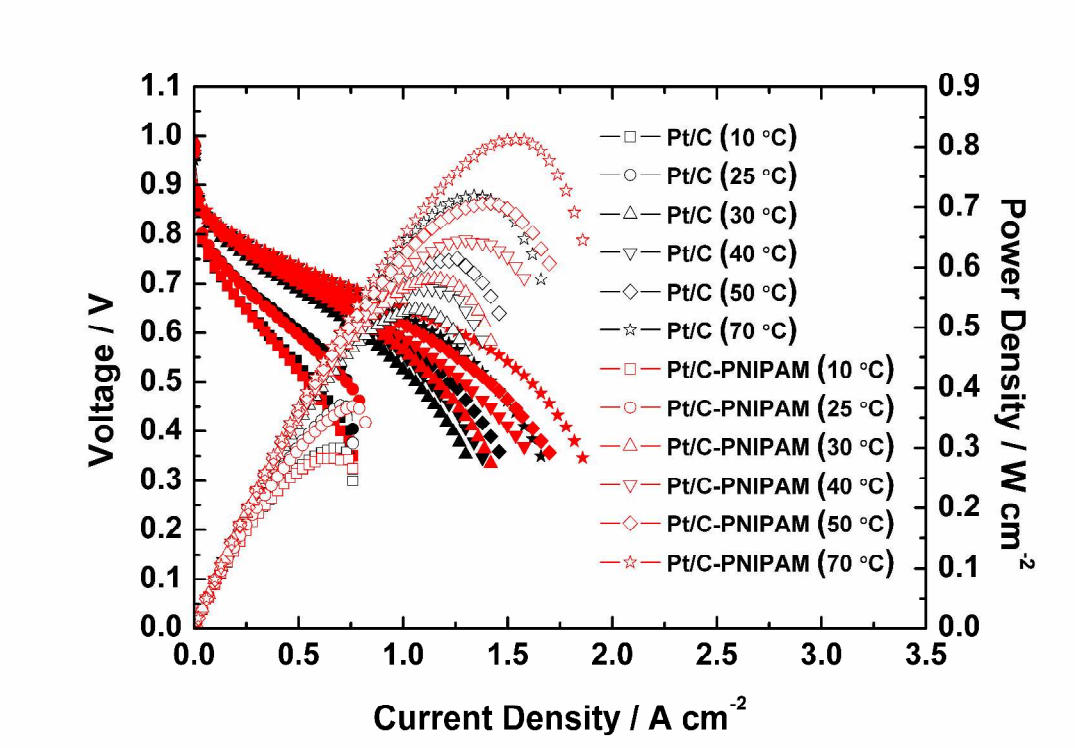

Figure S3. Unit cell performances of MEAs with Pt/C and Pt/C-PNIPAM depending on the cell temperatures.

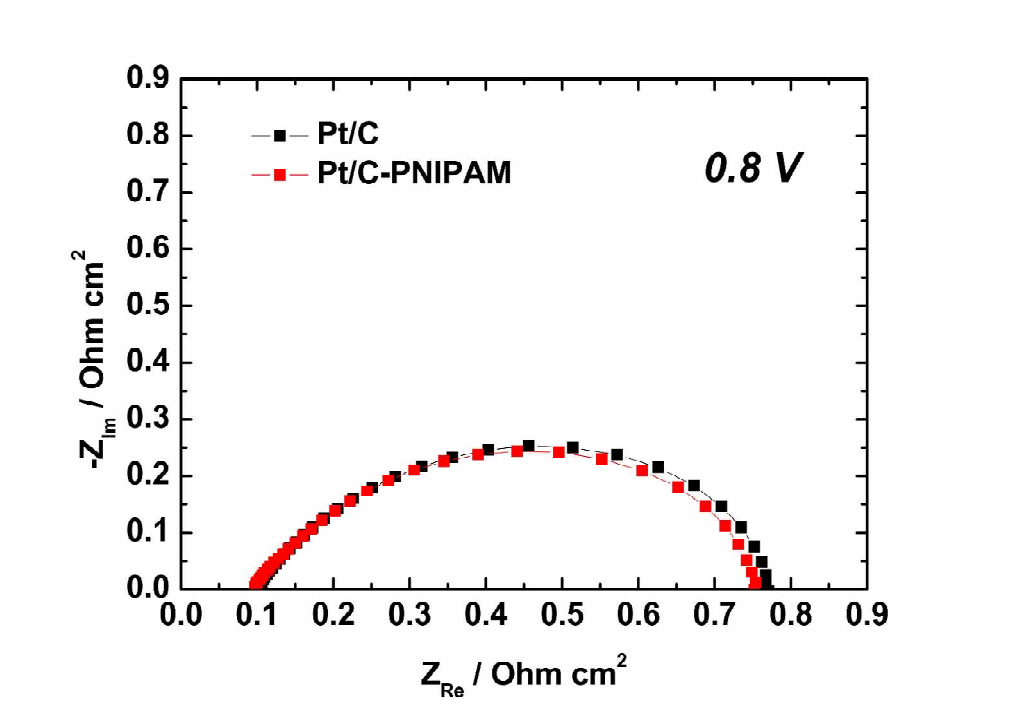

Figure S4. Electrochemical impedance spectroscopy (EIS) of the MEAs with Pt/C and Pt/C-PNIPAM at 0.8 V.