Electronic Supplementary Material (ESI) for Faraday Discussions.

Supplementary Information

Temperature Dependence of Electrocatalytic Water Oxidation: A Triple Device Model with Photothermal Collector and Photovoltaic Cell Coupled to Electrolyzer

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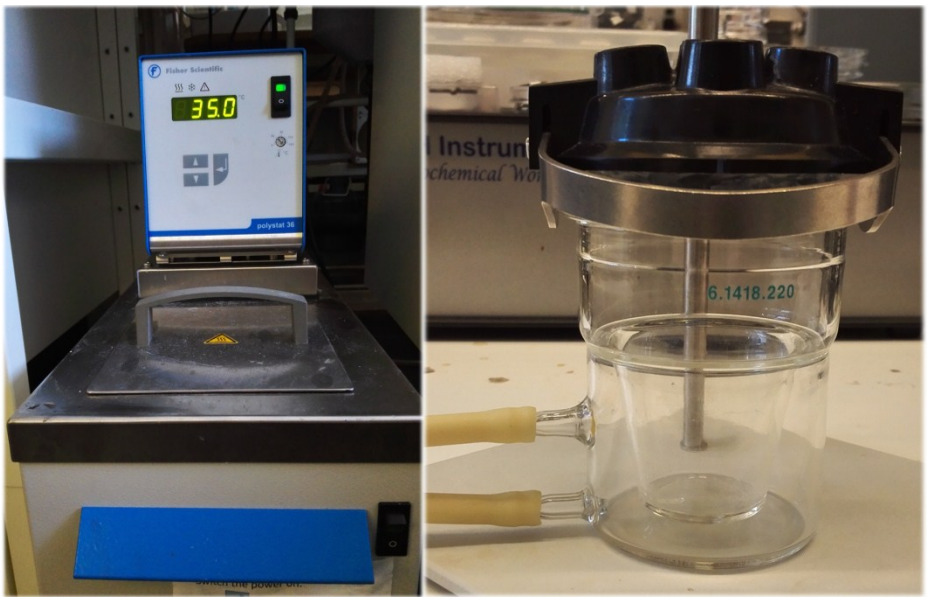

Fig. S1 Photographs of double-walled electrolytic cell (right) and thermostatic water bath circulator (left).

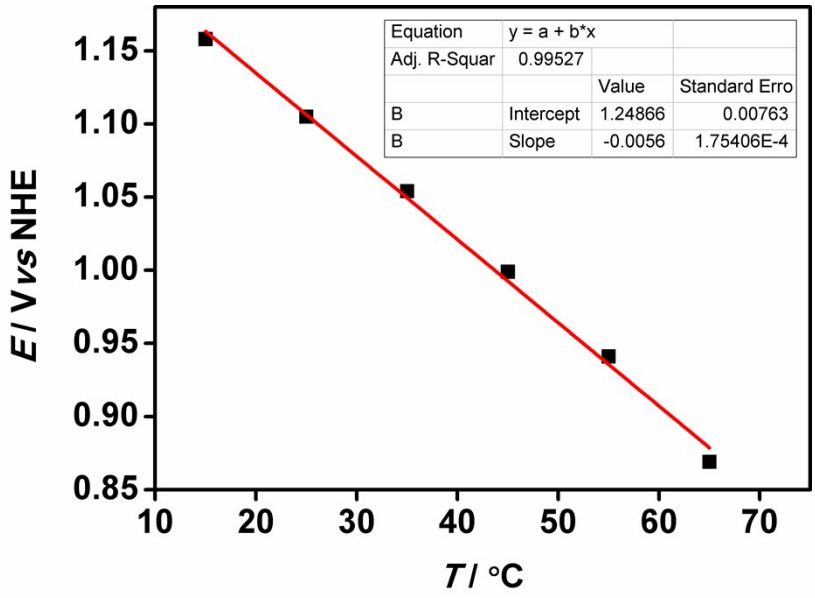

Fig. S2 Plot of onset potentials of thin Co-Pi anode with the operating temperature (data are extracted from Fig. 2a).

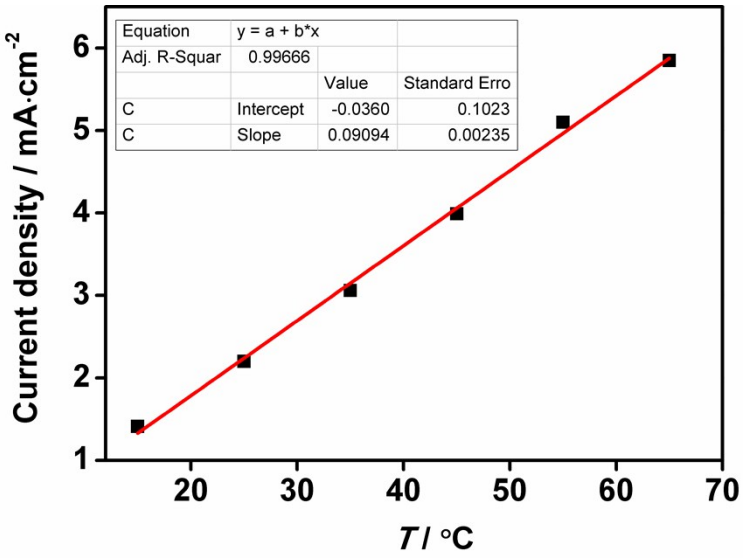

Fig. S3 Plot of current density of electrolysis at 1.4 V with operating temperature of thick Co-Pi anode.

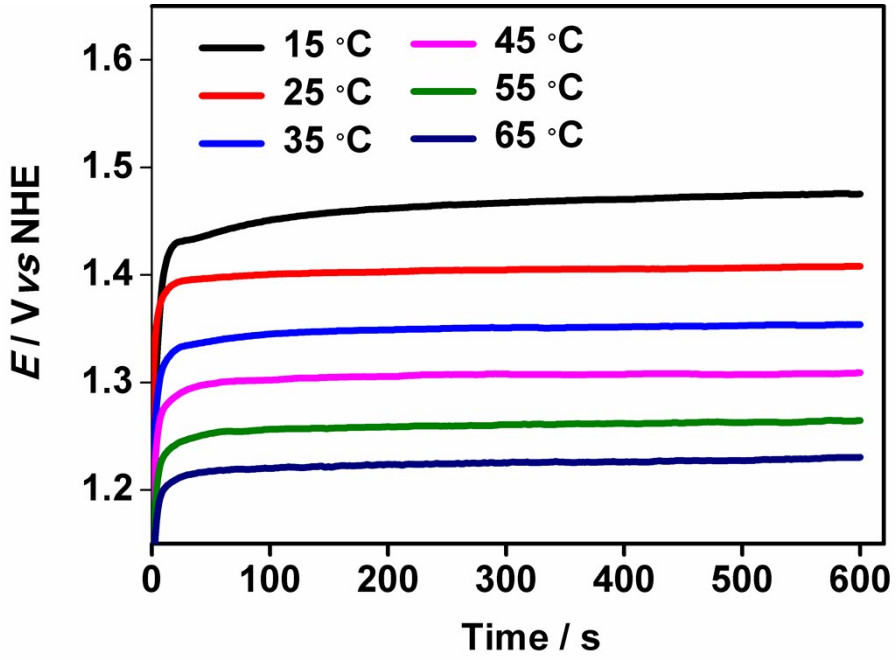

Fig. S4 Chronopotentiometric curves at current density of 2.0 mA/cm^2 of thick Co-Pi anode at various temperatures.

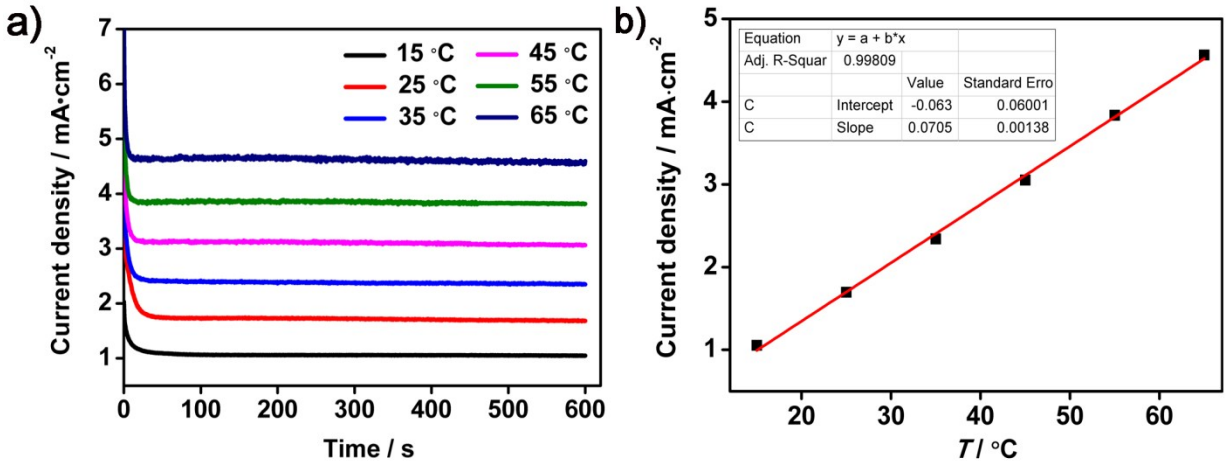

Fig. S5 a) Bulk electrolysis curves of Ni-Bi anode at 1.3 V under various temperatures; b) Plot of current density of electrolysis at 1.3 V with operating temperature of thick Ni-Bi anode.

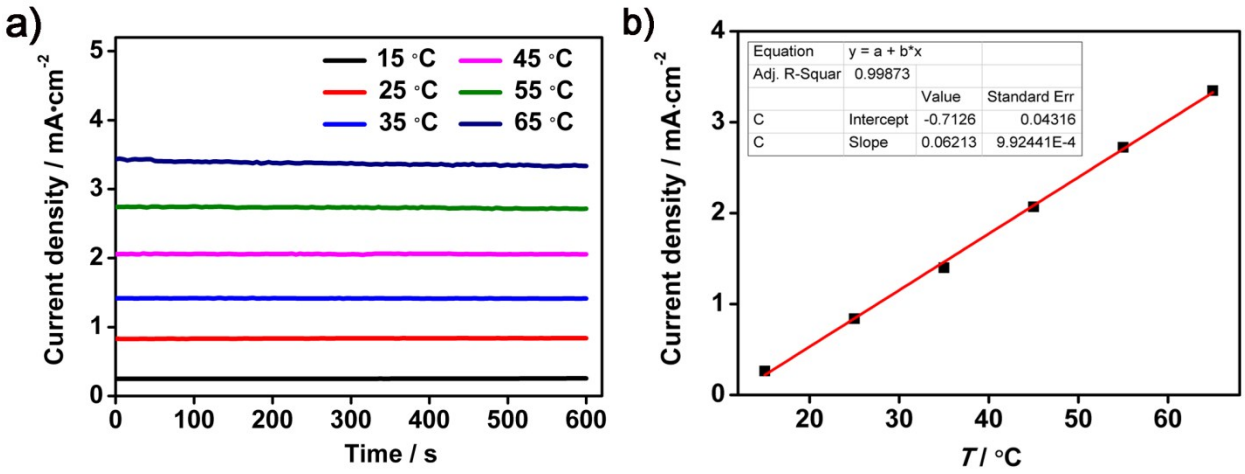

Fig. S6 a) Bulk electrolysis curves of Cu-Bi anode at 1.3 V under various temperatures; b) Plot of current density of electrolysis at 1.3 V with operating temperature of thick Cu-Bi anode.

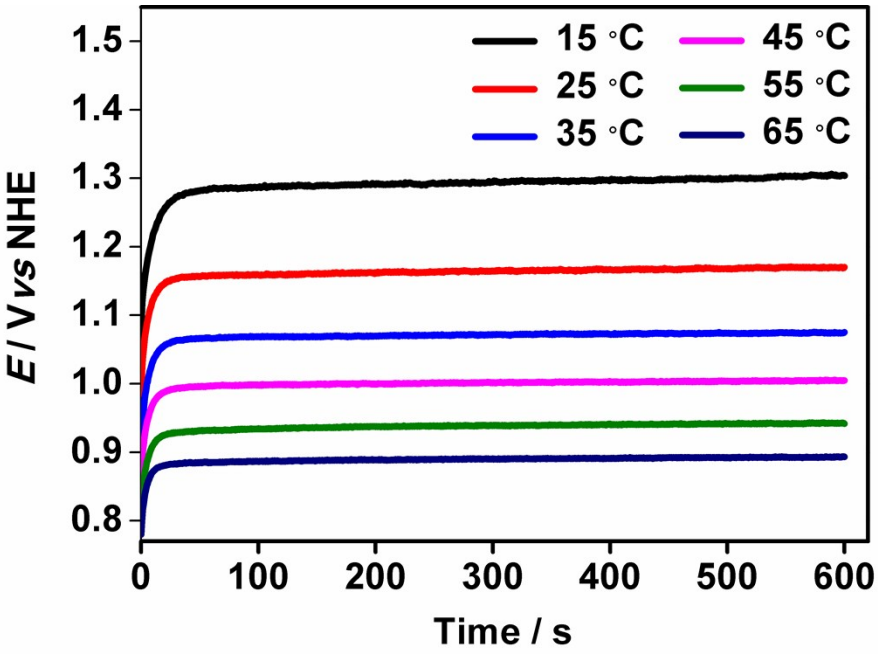

Fig. S7 Chronopotentiometric curves at current density of 2.0 mA/cm^2 of thick Ni-Bi anode at various temperatures.

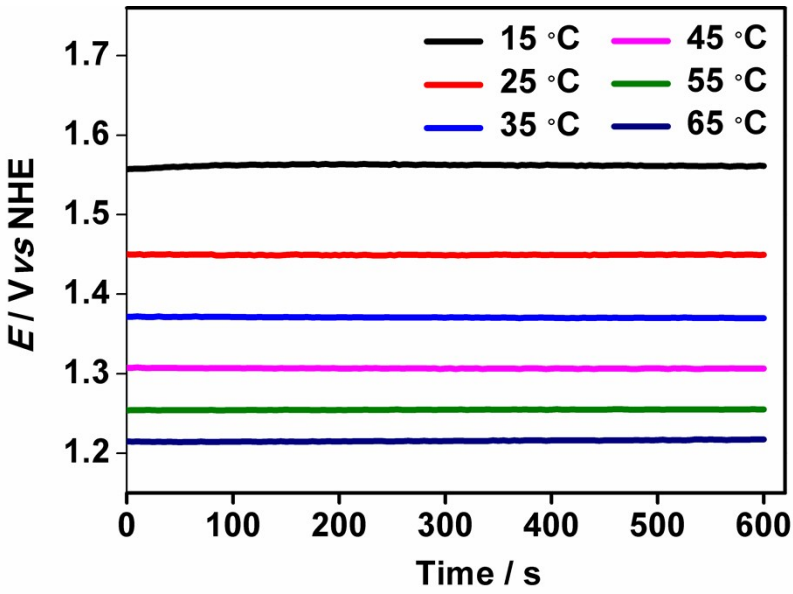

Fig. S8 Chronopotentiometric curves at current density of 2.0 mA/cm^2 of thick Cu-Bi anode at various temperatures.

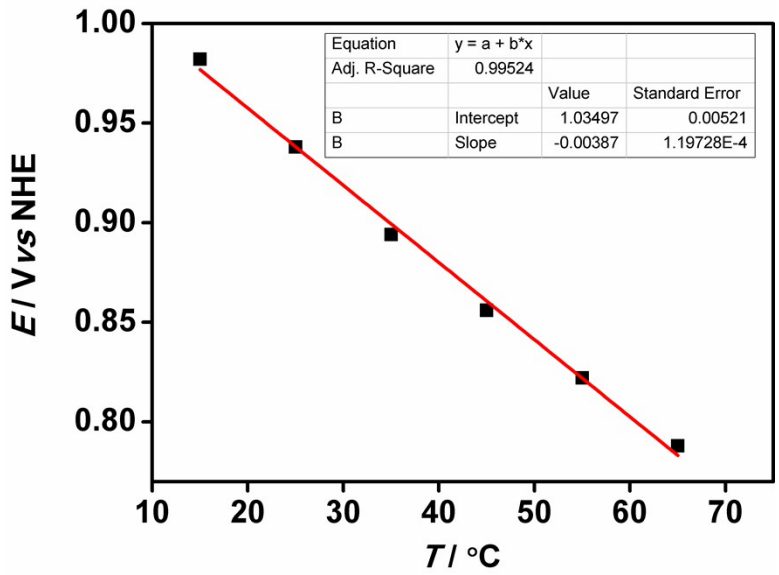

Fig. S9 Plot of the first oxidation peak potential of thin Co-Pi anode with the operating temperature (data are extracted from Fig. 3).

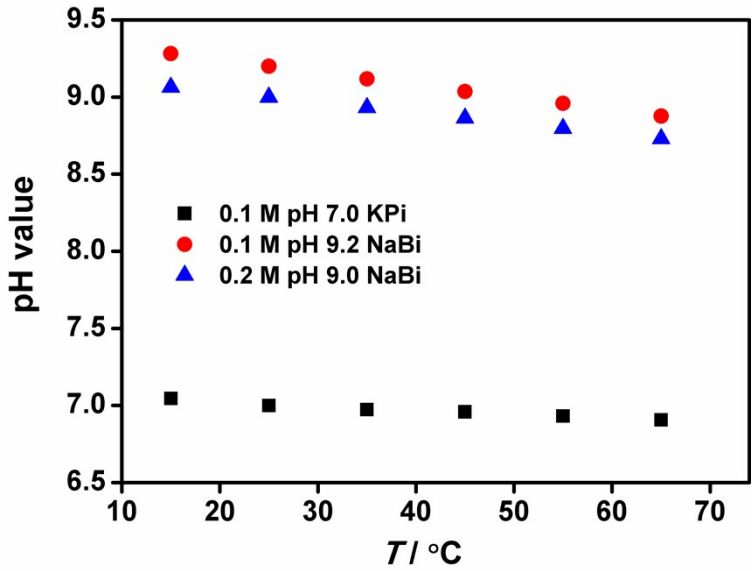

Fig. S10 Changes of pH values of 0.1 M pH 7.0 KPi buffer, 0.1 M pH 9.2 KBi buffer and 0.2 M pH 9.0 KBi buffer at various temperatures.

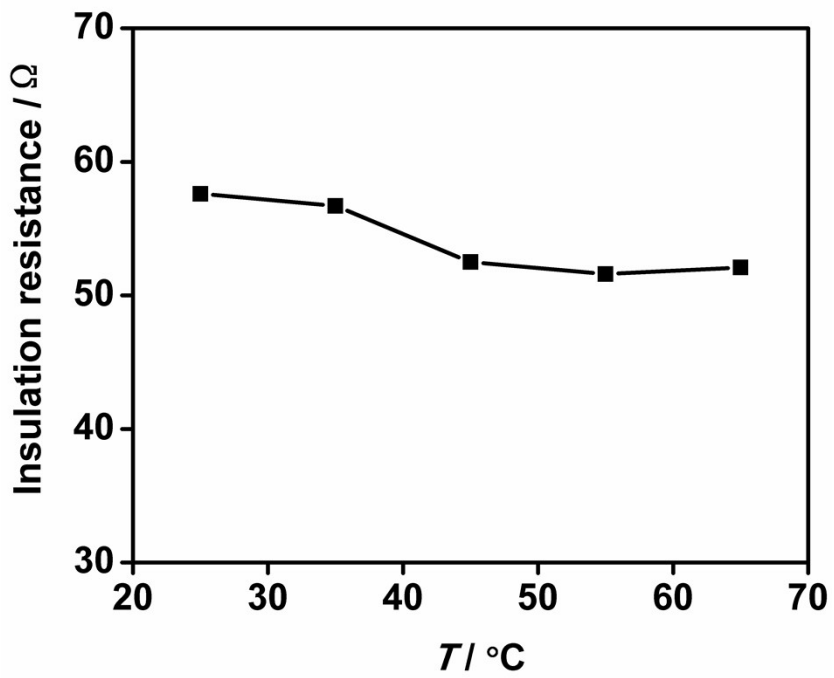

Fig. S11 Solution resistances of electronic cell equipped with Co-Pi anode detected at various temperatures.