Supplementary File

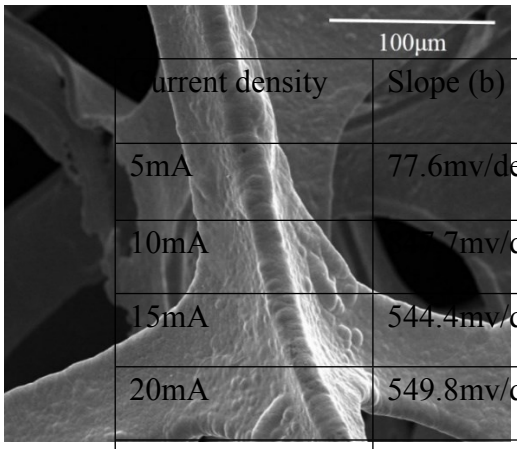

Figure S1. SEM images of Ni foam

urrent density	Slope (b)	Intercept(a)	i_0/mA·cm^{-2}(Exchange current density)
5mA	77.6mv/dec	0.7171	5.74*10^{-10}
10mA	7mv/dec	0.82205	0.0931
15mA	544.4mv/dec	0.79443	0.2064
20mA	549.8mv/dec	0.9024	0.0228
25mA	749.2mv/dec	0.57163	0.1726

Table S1. Calculation of the Tafel curve

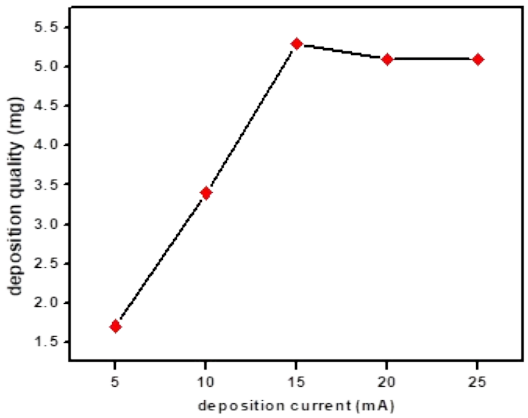

Figure S2. The variation curve of deposition mass

To probe the kinetics of CO_2 reduction, tafel plot data for CO_2 reduction to CO on Sn@Ni of different plating current were obtained and the tafel relationship can be expressed as follows:

$$E = E_0 - \frac{2.303RT}{\alpha n_\alpha F}\log(i_0) + \frac{2.303RT}{\alpha n_\alpha F} log(i_{CO}) \quad (1)$$

$$b = \frac{2.303RT}{\alpha n_\alpha F} \quad (2)$$

where E is the applied cathode potential, E_0 is the standard potential for the CO_2/CO couple, b is the Tafel slope, a is the electron transfer coefficient, n_α is the electron transfer number, i_0 is the exchange current density, and i_{CO} is the partial current density for CO_2 reduction to produce CO.