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A Nickel Coated Copper Substrate as a Hydrogen Evolution Catalyst

Poshan Kumar Reddy Kuppam [1], K. M. M. D. K. Kimbulapitiya [2,3], Srikanth Vuppala [4,*], Kuangye Wang [3], G. Phaneendra Reddy [5], Krishna P. Pande [6,*], Po-Tsung Lee [1,*] and Yun-Lun Chueh [4]

1 UST-IPP, College of Electrical and Computer Engineering, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan; poshank.ee04@nycu.edu.tw
2 Department of Physics, National Sun Yat-sen University, Kaohsiung 80424, Taiwan; supunbcc@gmail.com
3 Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu 30010, Taiwan; wangkuagye911101@gmail.com
4 Department of Civil and Environmental Engineering, Politecnico di Milano, Piazza Leonardo da Vinci, 32, 20133 Milan, Italy; ylchueh@mx.nthu.edu.tw
5 Department of Physics, Sri Venkateswara Vedic University, Tirupati 517 502, India; phaneendra369@gmail.com
6 International College of Semiconductor Technology, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan
* Correspondence: srikanth.vuppala@uniroma1.it (S.V.); kppande@nctu.edu.tw (K.P.P.); potsung@mail.nctu.edu.tw (P.-T.L.)

Supplementary Materials

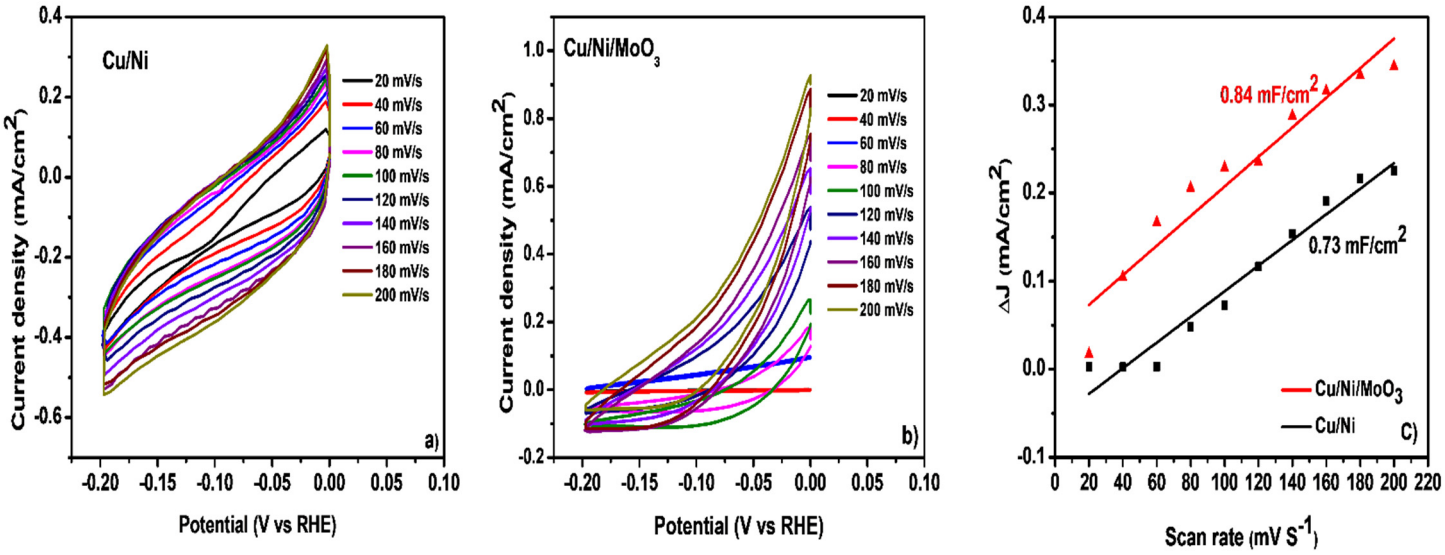

Figure S1. Cyclic voltammograms at different scan rates in the potential range of 20–200 mV/s in 0.1 M KOH solution with (**a**) Cu/Ni and (**b**)Cu/Ni/MoO_3 (**c**) measured Capacitive currents.

Cyclic voltammograms of Cu/Ni and Cu/Ni/MoO_3 were acquired at different scan rates of 20–200 mV/s in the voltage between −0.2–0 V (vs RHE) as shown in Figure S1 a and Figure S1. b. To evaluate the double layer capacitance (C_{dl}), ∇J (∇J=J_{anodic}-$J_{cathodic}$) vs scan rate was recorded at −0.1 V vs RHE and C_{dl} was calculated by taking half of the slope for both Cu/Ni and Cu/Ni/MoO_3 samples. As shown in Figure .c, C_{dl} for Cu/Ni is 0.73 mF/cm^2 while Cu/Ni/MoO_3 shows higher value at 0.84 mF/cm^2. These values are directly proportional to the electrochemical active surface area (ECSA) leading to the lower overpotential and Tafel slope of Cu/Ni/MoO_3.