

NiMoLa on Stainless Steel Wire for Hydrogen Evolution Reaction

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Stainless Steel is a suitable metal for Water splitting and get interests from many researchers. This metal has high durability under high pressure and acidity. Stainless steel also contains metals such as nickel and chromium, which makes it suitable for water splitting. Herein, Stainless Steel Wire (SSW) is adopted for substrates for water splitting. For the efficient evolution of hydrogen, NiMoLa is deposited on stainless steel as a hydrogen evolution reaction catalyst. NiMoLa/SSW shows good performance ($\eta_{-200}=68\text{mV}$ at 1M KOH) in alkaline environments. It also shows excellent durability at high temperatures and currents ($\eta_{-1000}=147\text{mV}$ at 5M KOH, 373K). Hence, this investigation demonstrated the utilization of highly conductive and high surface adhesion with catalyst of stainless steel (conductivity- 10^6 S/m @ STP) as an electrocatalytic support with NiMoLa, which is possible to replace the existing commercial low conductive TiO_2 (conductivity- 10^{-5} S/m @ 700 K) current collectors.