Use of Lignin-Derived Carbon to Prepare Nickel-Based Electrocatalysts for Water Splitting

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Water splitting is the most feasible way of obtaining hydrogen energy, but the high overpotential of the electrocatalytic materials conventionally used for water splitting create a bottleneck in the process. Herein, we prepare a NiS_x/C-780 electrocatalyst derived from lignin and nickel that exhibits good electrocatalytic properties and for which the overpotential of 358 mV at 10 mA cm⁻² for the oxygen evolution reaction (OER) and the Tafel slope of 107.7 mV dec⁻¹ are superior to those of commercial RuO₂. This study serves as a reference for designing low-cost and environmentally friendly electrocatalysts for water splitting.

Keywords: lignin, water splitting, nickel, electrocatalyst

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