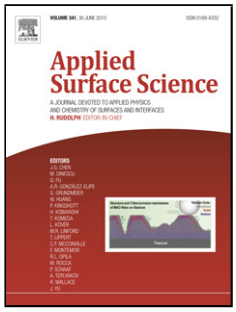

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PII: S0169-4332(15)02516-7
DOI: http://dx.doi.org/doi:10.1016/j.apsusc.2015.10.097
Reference: APSUSC 31578

To appear in: *APSUSC*

Received date: 18-8-2015
Revised date: 13-10-2015
Accepted date: 15-10-2015

Please cite this article as: <doi>http://dx.doi.org/10.1016/j.apsusc.2015.10.097</doi>

Three Dimensional Nickel Oxides/Nickel Structure by In Situ Electro-oxidation of Nickel Foam as Robust Electrocatalyst for Oxygen Evolution Reaction

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Abstract

Three dimensional (3D) nickel oxide/nickel (NiO_x/Ni) structure has been synthesized through a facile in situ electro-oxidation method. The formation of NiO_x through the electro-oxidation process has been proved by SEM and EDX, with some dense black dots appearing on the surface of Ni foam and the molar ratio of O/Ni increasing, which is nearly 7 times larger than the pure Ni foam. The increase in O content indicates the formatted black particles on the surface of Ni foam are composed of NiO_x. The electrocatalytic property of the obtained 3D NiO_x/Ni structure has been measured and it can be used as a highly active electrocatalyst for oxygen evolution reaction (OER). The overpotential to reach j=10 mA cm^{-2} is 0.39 V. And after the long-term I-t measurement, extremely high electrochemical and physical stability are exhibited in the 3D structure, keeping electrochemical activity and

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