Electronic Supplementary Material (ESI) for RSC Advances.
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Electronic Supporting Information (ESI) for the following publication:

In Situ addition of Graphitic Carbon into a $NiCo_2O_4$/CoO composite: its Enhanced Catalysis toward the Oxygen Evolution Reaction

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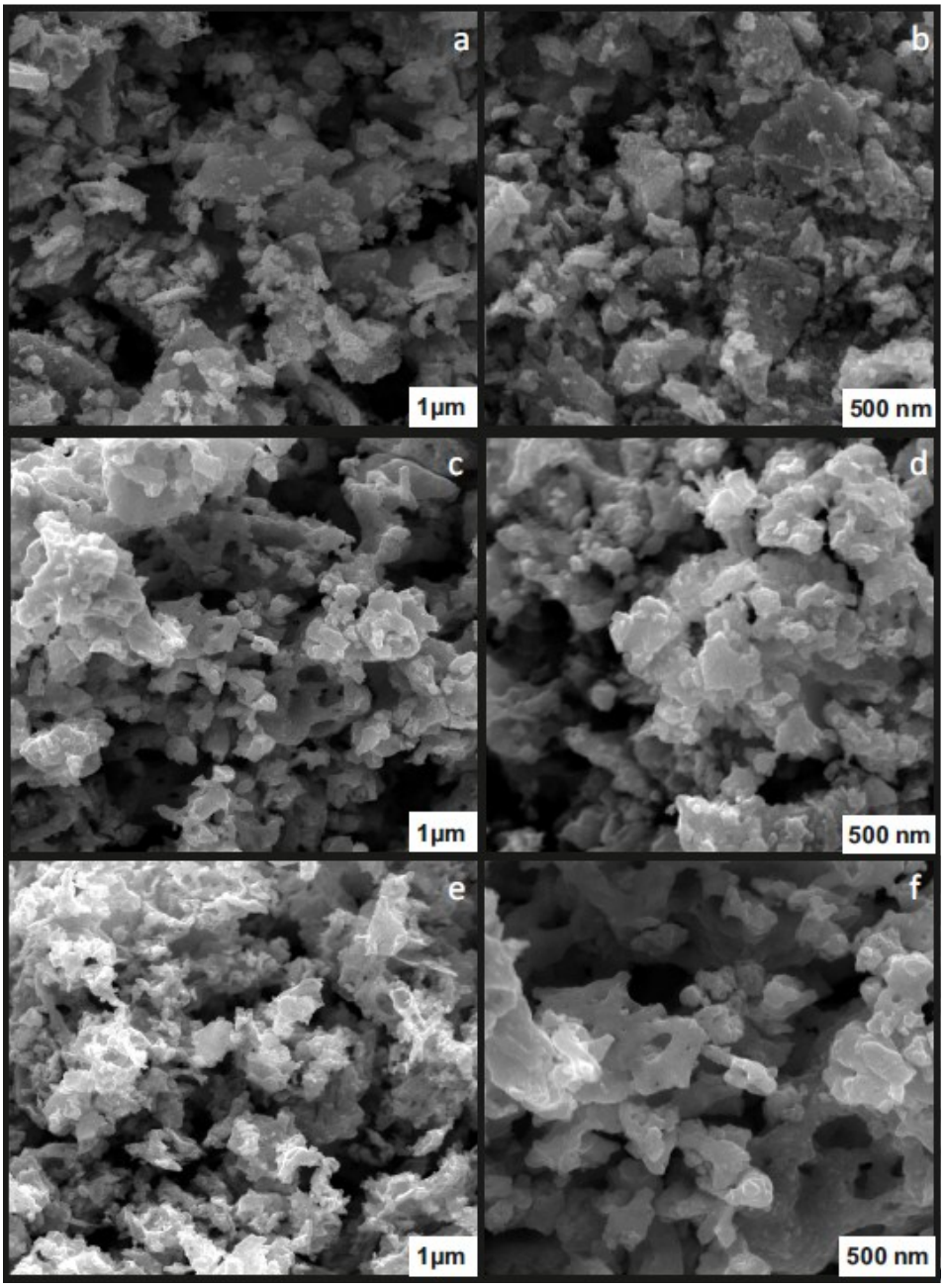
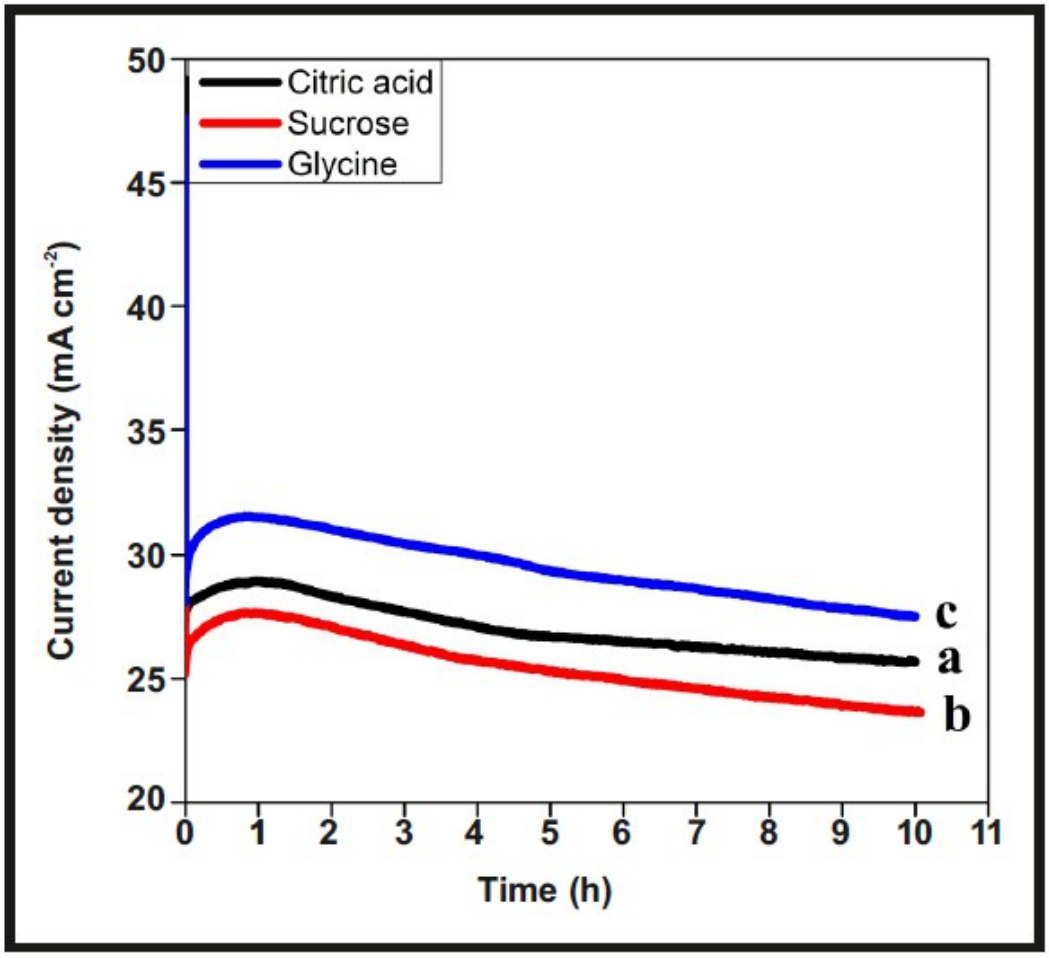
ESI Figure 1. SEM images of the $NiCo_2O_4$/CoO/graphitic carbon composite prepared at 500 °C/3 minutes using (a, b) citric acid, (c, d) sucrose, (e, f) glycine.



ESI Figure 2. Chronoamperometry stability curves of $NiCo_2O_4$/CoO/graphitic carbon composite derived from (a) citric acid, (b) sucrose and (c) glycine in applied potential of + 0.7 V in 1M KOH in the period of 10 hours.



Electrochemical calculations

Conversion of the potential measured *vs.* Ag/AgCl to RHE electrode

The potential measured *vs.* the Ag/AgCl electrode, was converted to the reversible hydrogen electrode (RHE) scale according to the Nernst equation [1-3]

$E_{RHE} = E_{Ag/AgCl} + 0.059 * 14 + 0.196$

The overpotential (η) was calculated according to the following equation [1-3]

$\eta\ (V) = E_{RHE} - 1.23\ V$

Turn over frequency

Turn over frequency (TOF) was calculated according to the following equation:

$TOF = jS/4Fn$

where j is the measured current density at η_{10}, S is the working electrode area (cm^2), F is the Faraday constant, 4 is the number of electrons involved in the OER and n is the number of moles of the catalyst present in the working electrode. [1, 2].

1. V. Maruthapandian, M. Mathankumar, V. Saraswathy, B. Subramanian and S. Muralidharan, *ACS Appl. Mater. Interfaces*, 2017, **9**, 13132-13141.
2. C. Chang, L. Zhang, C.-W. Hsu, X.-F. Chuah and S.-Y. Lu, *ACS Appl. Mater. Interfaces*, 2018, **10**, 417-426.
3. H. Shi and G. Zhao, *J. Phys. Chem. C*, 2014, **118**, 25939-25946.