





Clarifying the Role of the Reducers-to-Oxidizers Ratio in the Solution Combustion Synthesis of Ba0.5Sr0.5Co0.8Fe0.2O3-8 Oxygen Electrocatalysts

Francesca Deganello ^{1,*}, Leonarda F. Liotta ¹, Chiara Aliotta ¹, Antonio Barbucci ^{2,3}, Massimo Viviani ², Davide Clematis ³, Maria Paola Carpanese ^{2,3} and Sabrina Presto ²

- ¹ Istituto per lo Studio dei Materiali Nanostrutturati (ISMN)—Consiglio Nazionale delle Ricerche (CNR), Via Ugo La Malfa 153, 90146 Palermo, Italy; leonardafrancesca.liotta@cnr.it (L.F.L.); chiara.aliotta@alice.it (C.A.)
- ² Istituto di Chimica della Materia Condensata e di Tecnologie per l'Energia (ICMATE)—Consiglio Nazionale delle Ricerche (CNR), c/o DICCA-UNIGE, Via all'Opera Pia 15, 16145 Genova, Italy; barbucci@unige.it (A.B.); massimo.viviani@cnr.it (M.V.); carpanese@unige.it (M.P.C.); sabrina.presto@cnr.it (S.P.)
- ³ Dipartimento di Ingegneria Civile, Chimica e Ambientale (DICCA)—Università di Genova (UNIGE), Via all'Opera Pia 15, 16145 Genova, Italy; davide.clematis@edu.unige.it
- * Correspondence: francesca.deganello@cnr.it; Tel.: +39-091-680-9387



Figure S1. Trend on the cubic BSCF cell parameter with the amount of secondary phase in the BSCF powders after calcination at 950 °C for 5 h. Dots of different color indicate different samples: BSCF31 (olive green dot), BSCF22 (blue dot), BSCF17 (red dot) and BSCF10 (black dot). Error bars are also indicated for cell parameters values.



Figure S2. TGA under airflow of BSCF17 (red squares and line), BSCF22 (blue dots and line) and BSCF31 (olive green squares and line) as-burned powders. The dashed black line indicates the shift in the formation temperature of the BSCF perovskite–type phase. Data presented in Figure S2 were collected by a TG-DTA equipment (Labsys, Setaram) under flowing synthetic air. Baseline subtraction was carried out in order to eliminate instrumental drift.



Figure S3. XRD patterns of BSCF22 powders after H2-TPR. The main peak of Co is indicated by a light gray rectangle. Minor peaks of Ba(Sr)CO3 (aragonite-type) and Fe/Co spinel phases are indicated by an asterisk and a circle, respectively. The XRD pattern of BSCF31 after calcination at 950 °C for 5 h is reported in the figure as a reference (green dots) and the main perovskite peak (which is absent after TPR) is indicated by a light orange rectangle.