The Effect of B-site Doping on $NdBaCo_aFe_{2-a}O_6$ (a= 1.8, 1.6, 1.4, 1.2) for Enhanced OER/ORR Activity and Rechargeable Zinc- Air Battery Performance

Çağla Özgür[1], Çiğdem Toparlı [1]
[1]Department of Metallurgical and Materials Engineering, Middle East Technical University, 06800, Ankara, Turkey

Among the numerous electrochemical energy storage technologies, rechargeable zinc-air batteries (RZABs) are increasing in popularity due to their high theoretical energy density, cost-effectiveness, and environmental friendliness[1–3]. However, the lack of effective, reliable, and affordable bifunctional oxygen evolution and oxygen reduction reaction electrocatalysts prevents RZAB's commercialization. Due to its adjustable properties, double perovskite oxides (A2BB'O6) are currently being considered as potential electrocatalysts but the effect of B-site doping to the double perovskite oxides on the bifunctional electrocatalytic activity and their application to the zinc- air batteries as an air cathode are still missing[4,5].

Therefore, in this study we synthesized B-site doped NdBaCoaFe2-aO6 (a= 1.8, 1.6, 1.4, 1.2) electrocatalysts and we investigated their oxygen evolution and oxygen reduction reaction activities. Then, we apply this electrocatalysts to RZABs as an air cathode and measure their capacities and stabilities. Hence, our work demonstrates that changing the elements in the B-site of double perovskite oxides, changes the electrocatalytic bifunctional activity and the Zinc-Air battery performance.

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Cagla Ozgur is a gradute student and research asisstant at Metallurgical and Materials Engineering Department of Middle East Technical University. She is working on the design of bifunctional electocatalysts for zinc-air batteries under the supervision of Assist. Prof. Cigdem Toparli.

Presentating author: Cagla Ozgur, e-mail: caglaoz@metu.edu.tr tel: +90 (312) 210-5829