

# NANO ZEOLITES AS ELECTROCATALYSTS FOR OER IN ALKALINE MEDIA

Jadranka Milikić<sup>1</sup>, Sara Knežević<sup>2</sup>, Kristina Radinović<sup>1</sup>, Ana Nastasić<sup>1</sup>, Aleksandar Jović<sup>3</sup>, Aldona Balčiūnaitė<sup>4</sup>, Radmila Hercigonja<sup>1</sup>, Biljana Šljukić<sup>1,5</sup>

<sup>1</sup>University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12-16, 11158 Belgrade, Serbia

<sup>2</sup>University of Belgrade, Faculty of Chemistry, Studentski trg 12-16, 11158, Belgrade, Serbia

<sup>3</sup>Državni univerzitet u Novom Pazaru, Departman prirodno-matematičkih nauka, Vuka Karadžića bb, Novi Pazar

<sup>4</sup>Center for Physical Sciences and Technology, Saulėtekio Ave. 3, Vilnius LT-10257, Lithuania

<sup>5</sup>CeFEMA, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisbon, Portugal

[jadrankamilikic87@gmail.com](mailto:jadrankamilikic87@gmail.com)

Term nanozeolites refers to a group of zeolites with particle size smaller than 200 nm and a narrow particle size distributions [1]. They are typically composed of single particles that are not agglomerated. Possibility of inserting different cations as well as high surface area and porosity of nanozeolites makes them attractive for applications in electrocatalysis. Herein, NiY and CuY zeolites were prepared by ion-exchange starting from parent NaY zeolite and subsequently ball-milled to prepare nanozeolite counterparts as evidenced by scanning electron microscopy. These were evaluated for oxygen evolution reaction (OER) as the anodic reaction in water electrolyzers. It is known that OER is a multi-step process that limits the efficiency of the water splitting process used for production of green hydrogen [2]. Both nanozeolites demonstrated moderate activity for the OER with CuY demonstrating somewhat better performance in terms of lower overpotential, higher current densities recorded and lower Tafel slope. Future studies aiming to enhance the nanozeolites' performance for OER will include coupling nanozeolites with highly conductive materials such as carbon nanostructures as well as more detailed study of their stability under OER polarisation conditions.

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[1] C. Chen, B. Hou, T. Cheng et al., The integration of both advantages of cobalt-incorporated cancrinite-structure nanozeolite and carbon nanotubes for achieving excellent electrochemical oxygen evolution efficiency, *Catalysis Communications* 180, 106708 (2023).

[2] J. Milikić, S. Stojanović, Lj. Damjanović-Vasilić et al., Porous cerium-zeolite bifunctional ORR/OER electrocatalysts in alkaline media, *Journal of Electroanalytical Chemistry* 944, 117668, (2023).