Special Issue

Non-noble Metal Electrocatalysts for the Oxygen Reduction Reaction

Message from the Guest Editors

As the heart of the fuel cell, the oxygen reduction reaction (ORR) is of paramount importance, while platinum-based noble metal electrocatalysts are known as highly efficiently ORR electrocatalysts for fuel cells. However, the high cost and limited reserve of Pt preclude commercial applications. In order to further reduce or even eliminate the usage of Pt, great efforts have been made on the development of non-noble metal electrocatalysts (NNMEs). NNMEs are regarded as the most promising electrocatalysts as alternatives for Pt-based electrocatalysts for the ORR, though the relatively low density of active sites in NNMEs hinders their research and development. Thus, from the aspects of synthesis method and mechanism research, it is crucial to enhance the effective exposure of the active sites in NNMEs. As a result, iron- and/or cobalt-based NNMEs are highly effective for ORR in alkaline and acidic solution. This Special Issue aims to cover recent progress and trends in designing, synthesizing, characterizing, and evaluating advanced NNMEs for both alkaline and acidic solution.

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Deadline for manuscript submissions

closed (31 August 2023)

Catalysts

an Open Access Journal by MDPI

Impact Factor 4.0
CiteScore 7.6

mdpi.com/si/97781

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