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High Performance Bifunctional Electrocatalysts

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Message from the Guest Editor

Bifunctional electrocatalysts are critical components of advanced energy storage and conversion devices, such as metal-air batteries (MAB), regenerative fuel cells (RFC), and overall water-splitting systems. These catalysts must show high performance under the highly-oxidizing conditions of an oxygen evolution reaction (OER), and the highly-reducing conditions of an oxygen reduction reaction (ORR) in the case of MABs and RFCs or a hydrogen evolution reaction (HER) for overall water-splitting. While bifunctionality of the OER-ORR and OER-HER couples is the most widely studied, this Special Issue is open to all bifunctional reactions couples. These strongly varying and harsh operation conditions also impose special requirements on the stability of catalyst materials. Thus, activity and stability during bifunctional operation are key issues in the development of improved materials for bifunctional devices.

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