

Shape-controlled nanoparticles in Electrocatalysis: from fundamentals to recent advances and future challenges

José SOLLA-GULLÓN - University of Alicante

Shape-controlled nanoparticles are advanced nanomaterials containing a preferential and well-defined surface structure. The application of these shaped nanoparticles in Electrocatalysis has significantly improved the activity and selectivity of many relevant electrocatalytic reactions because most of them are well-established to be surface structure sensitive. In this contribution, some of the basic requirements for properly utilizing these shaped metal nanoparticles in electrochemical reactions will be discussed, including surface cleanliness and correlations between particle shape and surface structure. Also, some relevant and recent advances in the application of these shaped nanomaterials for different electrochemical reactions of interest will be highlighted. Finally, some of the most important remaining challenges on this topic will be also analyzed and discussed.