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Efficient cathode oxygen reduction reaction of fuel cells

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The fuel cell is the only power unit that has both no pollution, high efficiency, wide application, no noise, and can work continuously. Therefore, it is currently receiving universal attention from all countries in the world and is considered as the most promising clean power generation technology with the most promising development in the 21st century. Fuel cells are attracting considerable interest as a means of producing electricity by direct electrochemical conversion of hydrogen and oxygen into water. The overpotential of cathode oxygen reduction in fuel cells is the main factor restricting its development. At present, platinum is the best cathode catalyst, but due to its high price, it has become a bottleneck restricting the large-scale commercial production of fuel cells. Now people are starting to pay attention to platinum alloys and non-precious metal catalysts such as perovskites, peptide phthalocyanines, metal oxides, etc. These catalysts also have good oxygen reduction catalytic performance. The mechanism of oxygen reduction reaction is very complicated and there is not a unified statement yet. By exploring the oxygen reduction mechanism, we have determined the excellent oxygen reduction catalytic performance of the selected catalyst. A number of research groups have started this research. I believe that it will have more space of development and benefit to human in the near future. As fuel cell technology continues to mature, its role in various fields will become more and more obvious, and its development potential is enormous.

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