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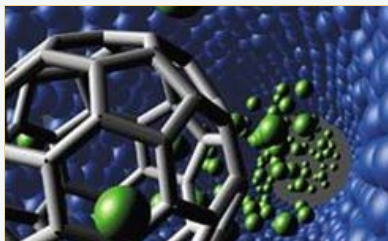
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Science



Platinum Replaced with Manganese Oxide Nanocatalyst for Water Oxidization

TEHRAN (FNA)- Iranian researchers from the Institute for Advanced Studies in Basic Sciences of Zanjan in cooperation with their counterparts from the Russian and American universities succeeded in the synthesis of a catalyst that is able to oxidize water as a green fuel.



In addition to its reasonable price, this compound can be compared to platinum for water oxidation.

The researchers synthesized a type of manganese oxide that is able to oxidize water in acidic environment, and it reacts like the expensive platinum in this reaction. The cheap electrons obtained in this reaction can be used in the reduction of various components. The reduction of carbon dioxide to methane or the reduction of nitrogen to ammonium are the examples of this application.

"A kind of manganese oxide nanolayer structure is formed when the metallic ions of calcium enter the manganese structure," Dr. Mohammad Mehdi Najafpour, one of the researchers of the project, stated, and added, "It provides a large surface for water oxidation, and it severely activates this process due to its nanometric properties."

Results of this research and the produced component may lead to the production of cost-effective materials that are used in water decomposition in future. On the other hand, if solar energy can be converted to electricity with high efficiency by using novel solar cells, the energy is transferred to the catalysts and it is used in water decomposition. In other words, hydrogen can be obtained as a green fuel by using the cost-effective solar energy, appropriate catalysts, and water.

Results of the research have been published in Dalton Transactions, 2013, issue 14, pp. 5058-5091.

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