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More insights into water oxidation in artificial photosynthesis

(*Nanowerk News*) Researchers at the Institute for Advanced Studies in Basic Sciences (IASBS), in Zanjan city, managed to carry out a comprehensive investigation to identify nanosized manganese oxides as the active catalysts for water oxidation in the reaction of some manganese complexes (see paper in *Dalton Transactions*: "Nano-sized manganese oxide: a proposed catalyst for water oxidation in the reaction of some manganese complexes and cerium(IV) ammonium nitrate").

The artificial photosynthesis has been a subject of intense scholarly interest during the recent years with the objective of creating useful materials or solar energy storage through a smart inspiration from the natural photosynthesis process. The results of the conducted research at IASBS have revealed that nano-metric manganese oxides, which are yielded through the decomposition of manganese complexes, act as active species in the water oxidation process.

“By applying a number of common analysis techniques, we came to find some similarities in reactions of different manganese complexes with cerium (IV) ammonium nitrate which is a well-known and popular oxidizing agent. Further studies led us to conclude the presence of a special type of nano-dimensioned manganese oxide in the reactions of a number of complexes within the water oxidation process. Briefly put forth, we postulate that these complexes break down initially to form special manganese oxide species which subsequently take part in the water oxidation process by a unique mechanism,” Dr. Mohammad Mahdi Najafpour, a member of the research group, explained.

The results of this research shed light on understanding the mechanism of water oxidation and enable better design of water oxidizing catalysts. In addition, other researchers may find the mentioned work to their interest as it gives novel and useful information on choice of the compound and the water oxidation mechanism in the presence of manganese complexes.

Source: *INIC*

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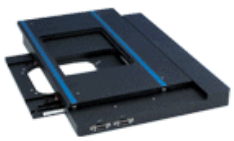

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