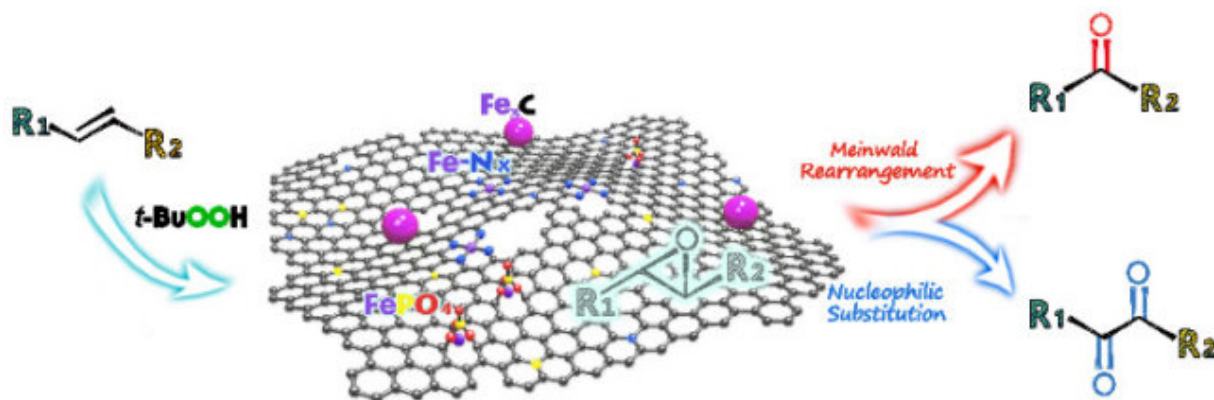


# Scientists propose novel bifunctional iron nanocomposite catalyst

April 10 2020, by Li Yuan



Synthesis of ketones and 1,2-diketones via oxidation of alkenes catalyzed by bifunctional iron nanocomposite catalyst. Credit: SONG Tao

Oxidation of alkenes to carbonyl compounds is one of the most important industrial reactions. The oxidation products are important and useful intermediates or building blocks in synthetic organic chemistry, pharmaceuticals, agrochemicals and bulk/fine chemicals.

Traditional synthetic methods require harsh and environmentally unfriendly conditions. Therefore, developing a green and efficient catalytic process is highly desirable.

Recently, a research team led by Prof. Yang Yong from the Qingdao

Institute of Bioenergy and Bioprocess Technology (QIBEBT) of the Chinese Academy of Sciences (CAS) reported the fabrication of a bifunctional iron nanocomposite catalyst, in which two catalytically active sites of oxidation and Lewis acid sites are simultaneously integrated into a porous carbon.

As a bifunctional catalyst, it exhibited [high efficiency](#) for direct oxidative cleavage of alkenes into ketones or their oxidation into 1,2-diketones with a broad substrate scope and high functional group tolerance in water under mild reaction conditions. Meanwhile, the catalyst is highly stable and can be recycled for several times.

This work not only opens up a fancy pathway in the rational design of Fe-N-C catalysts, but also offers a simple and efficient method for accessing industrially important ketones and 1,2-diketones from alkenes in a cost-effective and environmentally benign fashion.

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**More information:** Tao Song et al. A Bifunctional Iron Nanocomposite Catalyst for Efficient Oxidation of Alkenes to Ketones and 1,2-Diketones, *ACS Catalysis* (2020). [DOI: 10.1021/acscatal.9b05197](#)

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