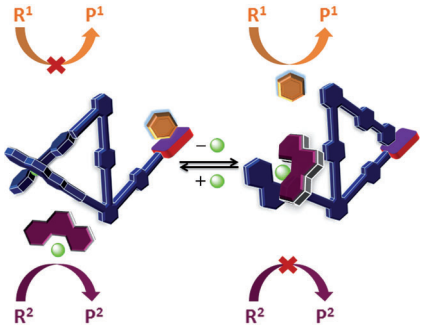
Fuel Cells

Forever young catalysts: An excellently performing electrocatalyst for the oxygen reduction reaction (ORR) is prepared by confined-space alloying of nanoparticles in the pores of a carbon support. Owing to the high specific activity and the small particle size even after thermal annealing, the catalyst has a high mass activity. The nanoparticles are also highly stable in accelerated aging tests.

Switchable Catalysis

Much more than ON and OFF! Like a switch used to toggle between two lamps, the molecular two-state nanoswitch may control two catalytic processes alternately. Here, in the two switching states the catalytically active substances are liberated and bound in alternation.



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Flashback: 50 Years Ago . . .

The chemical effects of nuclear reactions, which can involve "recoil atoms" that have high kinetic energies, were first reported in 1934. 30 years later, the recoil chemistry of tritium was of particular interest as it could be easily produced and was the only radioactive isotope with the chemical properties of hydrogen, and Friedrich Schmidt-Bleek and F. Sherwood Rowland summarized the recoil reactions of tritium with organic compounds in a Review. Rowland shared the Nobel Prize in Chemistry 1995 with Paul J. Crutzen and Mario J. Molina for their work on the formation and decomposition of ozone.

Diazonium species were the subject of two Communications. In the first report, T. Severin and J. Dählstrom described the synthesis of quinonoid diazo compounds from 2-(*p*-nitrophenyl)dimedone. In the second report, K. Bott discussed the synthesis of three stable aliphatic diazonium ions. The identities of these compounds were confirmed by the characteristic signals for the N≡N group in the infrared spectrum and by elemental analysis.

Siegfried Hünig and Helmut Quast reported on the detection of a heterocyclic nucleophilic carbene, which was produced by deprotonation of 3-methylbenzthiazolium salts. At that time, there was no reported reaction that could be proved to proceed via a carbene and not the corresponding dimer. In this case, the presence of the carbene was confirmed by comparing the reaction products of the carbene or the dimer with azidinium salts.

Read more in Issue 12/1964.