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12/2008

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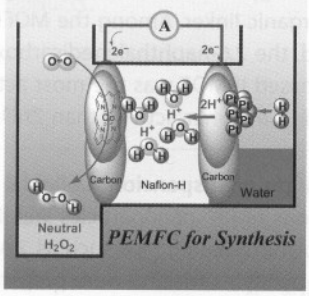
COVER PICTURE

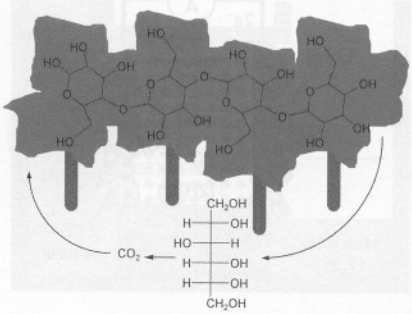


The cover picture shows the scheme of a polymer electrolyte membrane fuel cell (PEMFC) reactor for the catalytic synthesis of neutral solutions of hydrogen peroxide from hydrogen and oxygen. The industrial synthesis of H_2O_2 is currently limited to the multistep anthraquinone method, and the production costs and transport limitations of H_2O_2 are serious disadvantages for its wider use. Thus, methods for its direct production from O_2 and H_2 are much sought after. In their Communication on page 988 ff., I. Yamanaka et al. report the safe and direct synthesis of neutral H_2O_2 solutions from O_2 and H_2 using a new active cathode comprised of a Co-tetraphenylporphyrin electrocatalyst on vapour-grown carbon fibre. A maximum concentration of 13.5 wt% (4.0 M) H_2O_2 was obtained at a current density of 90 mA cm^{-2} with a current efficiency of 42% at 278 K.

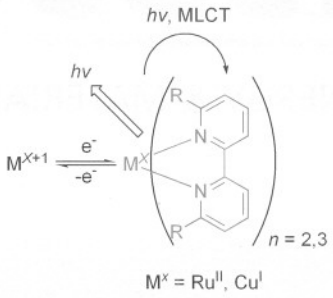
NEWS

MINIREVIEWS

Tree-hugging chemistry: The conversion of cellulose (non-food biomass) into chemicals can be carried out with the aid of heterogeneous catalysis using solid acids or supported metals (Pt, Ru). Thus, sugar alcohols such as sorbitol and mannitol can be formed with high selectivity under relatively mild conditions and then further transformed into value-added products.



HIGHLIGHTS



Copper for the scientist cunning at his trade: Ru^{II} complexes have long played the central role in the photochemical conversion of sunlight and dye-sensitized solar cells (DSSCs). Recently, however, the first examples of DSSCs sensitized by Cu^{I} polypyridyl complexes were reported. Cu^{I} complexes have comparable photophysical and electrochemical properties to Ru^{II} complexes and offer similar function with a cheaper and more abundant metal.

COMMUNICATIONS

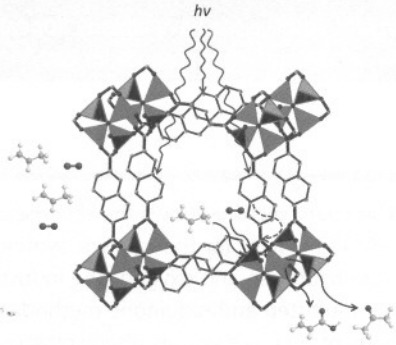
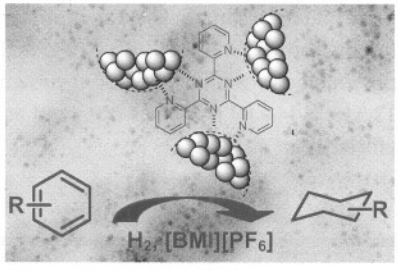
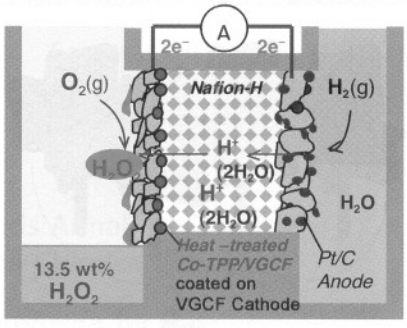


Photo frame(work): The first spectroscopic evidence of metal-organic frameworks (MOFs) acting as photocatalysts has been obtained. Isoreticular MOFs act as efficient photocatalysts in the photooxidation of propylene. The band gap energy can be tuned by changing the organic linker. Among the MOFs tested, the 2,6-naphthalenedicarboxylic acid based IRMOF was the most active, showing a higher activity than ZnO.

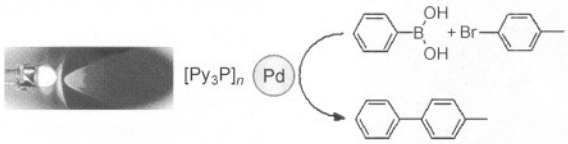


In a state of suspension: Colloidal suspensions of Rh^{0} nanoparticles stabilised by polynitrogen ligands such as 2,4,6-tris(2-pyridyl)-s-triazine were prepared in the ionic liquid l-*n*-butyl-3-methylimidazolium hexafluorophosphate ([BMI][PF_6]) by chemical reduction of Rh^{III}. The resulting suspensions of ligand-stabilised metallic nanoparticles were then applied as catalysts in the hydrogenation of arenes with excellent results.

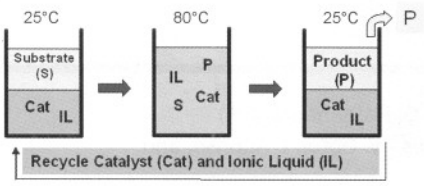


Peroxide power: Neutral solutions of H_2O_2 can be produced directly and safely from O_2 and H_2 by using a fuel cell reaction. The most active and efficient cathode is a vapour-grown carbon fibre (VGCF) electrode coated with Co-tetraphenylporphyrin (0.05 wt%) on VGCF (2 mg cm^{-2}). A maximum concentration of 13.5 wt% (4.0 M) H_2O_2 is obtained under optimized conditions at 278 K.

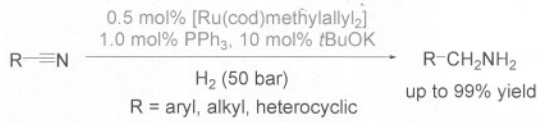
FULL PAPERS



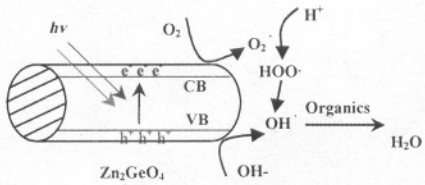
A little ray of light: Heating of a palladium catalyst that bears UV-A-absorbing phosphine ligands by selective UV-A irradiation in Suzuki–Miyaura- and Stille-type reactions leads to higher conversions of reactants at lower temperatures and an increased selectivity towards the cross-coupling product. Non-uniform heat distribution in the reaction mixture may cause this enhancement.



Mild, green fairy liquids: After screening a wide range of ionic liquids, a binary mixture of choline and betainium bis(trifluoromethylsulfonyl)imide ionic liquids was selected as the reaction medium for the hydrogenolysis of aromatic ketones. This mixture of ionic liquids functions both as co-catalyst and as immobilization medium for the palladium catalyst, which can efficiently be recycled after decantation of the reaction products.



Benign by design: An easily accessible in situ catalyst composed of [Ru(cod)(methylallyl$_2$)] and PPh_3 has been developed for the environmentally benign hydrogenation of various nitriles to give primary amines. The developed procedure is significantly more benign than the well-known stoichiometric reductions with metal hydrides.



Cleaner water in a flash: Zn_2GeO_4 nanorods with improved physicochemical properties were prepared by a surfactant-assisted hydrothermal method. These nanorods are efficient heterogeneous photocatalysts that induce the formation of reactive hydroxyl radicals for the decomposition of organic pollutants in wastewater.

What a corker! Suberin, a major component of cork, is a valuable renewable resource for the preparation of novel hydrophobic polymeric materials whose properties resemble those of petroleum-based aliphatic polyesters. Moreover, polycondensation of the suberin monomers under emulsion polymerization conditions or using *Candida antarctica* lipase are beneficial approaches from a green perspective.

Supporting information at www.chemsuschem.org (see article for access details).

A video clip is available as Supporting Information at www.chemsuschem.org (see article for access details).

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Issue 11, 2008, was published online on November 14, 2008.