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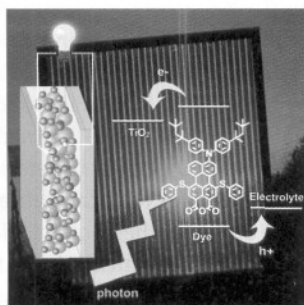
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COVER PICTURE



The cover picture shows the working principle of a dye-sensitized solar cell based on a novel perylene organic sensitizer (dye), which exhibits two absorption bands at 620 and 462 nm and reversible oxidation and reduction potentials. The energetic alignment of the HOMO and LUMO of the dye is well suited for electron injection into the TiO_2 conduction band as well as for regeneration of the dye by either an electrolyte containing a redox system or a solid-state hole conductor. In their Communication on page 615 ff., M. K. Nazeeruddin et al. report that a solar cell comprised of perylene-anchored TiO_2 films and the iodine-iodide redox couple yields an unprecedented incident monochromatic photon-to-current conversion efficiency of 87%. The thiophenol donor groups provide directionality in the excited state leading to an improved short-circuit current density, open-circuit potential, and power conversion efficiency under standard AM 1.5 solar conditions.

NEWS

Spotlights on our sister journals

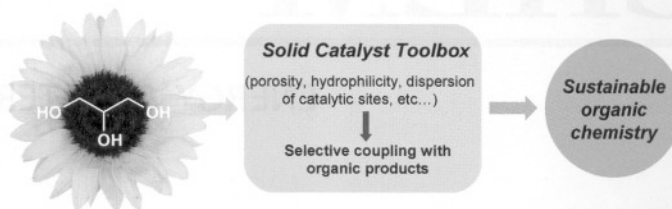
580–581

REVIEWS

F. Jérôme,* Y. Pouilloux, J. Barrault

586 – 613

Rational Design of Solid Catalysts for the Selective Use of Glycerol as a Natural Organic Building Block



One man's junk is another's treasure: From biodiesel waste to sustainable chemistry, glycerol has emerged as an important organic building block that can be reacted with various organic substrates over solid catalysts in envi-

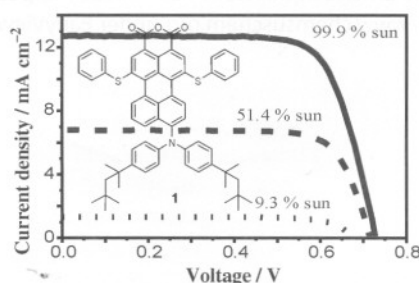
ronmentally friendly processes. These pathways offer a promising alternative to the use of highly toxic and expensive building blocks such as epichlorohydrin, 3-chloro-1,2-propanediol, and glycidol.

COMMUNICATIONS

C. Li, J.-H. Yum, S.-J. Moon, A. Herrmann, F. Eickemeyer, N. G. Pschirer, P. Erk, J. Schöneboom, K. Müllen, M. Grätzel, M. K. Nazeeruddin*

615 – 618

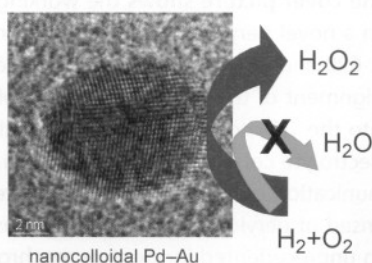
An Improved Perylene Sensitizer for Solar Cell Applications



Sunny side up: 1,6-Dithiophenol-substituted perylene organic sensitizer **1** was synthesized, and its photovoltaic properties in dye-sensitized solar cells were assessed. When anchored onto TiO₂ film, the dye exhibits an unprecedented incident monochromatic photon-to-current conversion efficiency of 87% and yields a power conversion efficiency of 6.8% under standard AM 1.5 solar conditions.

Y. Nomura,* T. Ishihara, Y. Hata, K. Kitawaki, K. Kaneko, H. Matsumoto

619 – 621

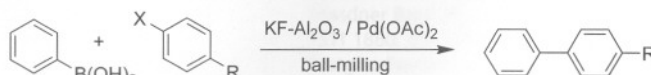
Nanocolloidal Pd-Au as Catalyst for the Direct Synthesis of Hydrogen Peroxide from H₂ and O₂

Every colloid has a gold lining: The direct synthesis of hydrogen peroxide from hydrogen and oxygen is attracting much interest as an alternative method for producing H₂O₂. Pd-Au bimetallic nanocolloid exhibits high catalytic activity for the direct synthesis of H₂O₂ from H₂ and O₂. The high activity results from the presence of Au on the colloid surface which suppresses the decomposition of H₂O₂ in the presence of H₂.

F. Schneider, B. Ondruschka*

622 – 625

Mechanochemical Solid-State Suzuki Reactions Using an In Situ Generated Base



Run of the 'mill: An inorganic support (KF·Al₂O₃) was used to generate the base in situ for Suzuki reactions carried out using mechanochemical treatment in a ball mill. Various aryl halides were

tested in the Pd-catalyzed coupling reaction with phenylboronic acid and KF·Al₂O₃. The best results were obtained with aryl bromides.

Breaking down is usually hard to do...

The direct conversion of lignin into alkanes and methanol was carried out in a two-step process (hydrogenolysis and hydrogenation) involving initial treatment of white birch wood sawdust with H_2 in dioxane/water/phosphoric acid using Rh/C as the catalyst. The resulting monomers and dimers obtained by selective C–O hydrogenolysis were then hydrogenated in near-critical water employing Pd/C as the catalyst.



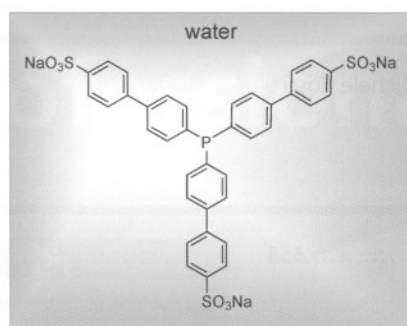
N. Yan, C. Zhao, P. J. Dyson, C. Wang,
L.-t. Liu, Y. Kou*

626 – 629

Selective Degradation of Wood Lignin over Noble-Metal Catalysts in a Two-Step Process

FULL PAPERS

Like a fish in water: A true water-soluble analogue of PPh_3 has been prepared starting from biphenyl bromide (see structure). The cone angle and the basicity of the trisulfonated trisbiphenyl-phosphane are similar to those of PPh_3 and result in a similar coordination mode in palladium and rhodium complexes. The water-soluble phosphane proved efficient as a ligand in aqueous hydroformylation and Tsuji–Trost reactions.

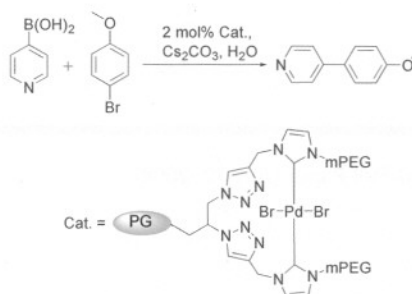


M. Ferreira, H. Bricout, F. Hapiot,
A. Sayede, S. Tilloy, E. Monflier*

631 – 636

A Property-Matched Water-Soluble Analogue of the Benchmark Ligand PPh_3

A Cat. with many tails: Dendritic polyglycerol (PG)-supported N-heterocyclic carbene–palladium complexes were developed and applied to Suzuki cross-coupling reactions. A variety of substrates were tested, and even pyridineboronic acids, which typically do not give good conversions, were coupled successfully in the presence of the dendritic catalyst. Moreover, the catalyst could be reused up to four times.

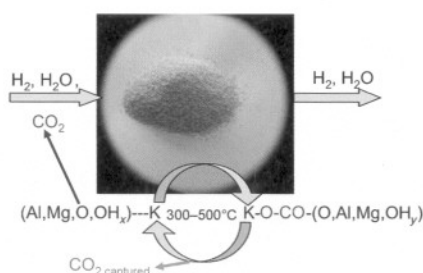


M. Meise, R. Haag*

637 – 642

A Highly Active Water-Soluble Cross-Coupling Catalyst Based on Dendritic Polyglycerol N-Heterocyclic Carbene Palladium Complexes

An important interaction: K_2CO_3 -promoted hydrotalcite-based and alumina-based materials are cheap and excellent materials for high-temperature (300–500 °C) adsorption of CO_2 and particularly promising in the sorption-enhanced water gas shift reaction. Potassium ions strongly interact with aluminium oxide centres in aluminium-containing materials and generate basic sites in hydrotalcite which reversibly adsorb CO_2 at 400 °C.



S. Walspurger,* L. Boels, P. D. Cobden,
G. D. Elzinga, W. G. Haije,
R. W. van den Brink

643 – 650

The Crucial Role of the K^+ -Aluminium Oxide Interaction in K^+ -Promoted Alumina- and Hydrotalcite-Based Materials for CO_2 Sorption at High Temperatures

VIEWPOINTS


A. Heller*


651 – 652

Chemical Engineering Challenges and Investment Opportunities in Sustainable Energy



Opportunity knocks: The chemical and energy industries are currently undergoing an important transformation with increasing petroleum prices and the impact of global warming. As a result, engineering challenges and investment opportunities abound as highlighted in this Viewpoint.

 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).

* Author to whom correspondence should be addressed.

BOOKS

The Future of Glycerol • Mario Pagliaro and Michele Rossi

A. Behr 653

SERVICE

Author Index 657 Preview 658

Keyword Index 657

All the Tables of Contents may be found on the WWW under:
<http://www.chemsuschem.org>

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RETRACTION

The correspondence author has withdrawn this Full Paper (July 10, 2008).

S.-Y. Liu, C.-J. Zhou, Q. Liu, G.-C. Liu,
C.-J. Huang, Z.-S. Chao*

Synthesis of Mesoporous La-, Cu-, and Cr-Doped Aluminophosphates and Their Catalytic Behavior in the Dehydration of Glycerol

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