New Application Developments in PGMs – January 2010

Solid nanoparticles that catalyze biofuel upgrade reactions at the water/oil interface: Palladium
Science, 01 January 2010, Vol. 327. no. 5961, pp. 68-72

http://dx.doi.org/10.1126/science.1180769

By depositing palladium onto carbon nanotube–inorganic oxide hybrid nanoparticles, Professor Daniel E. Resasco with other researchers at the University of Oklahoma have demonstrated biphasic hydrodeoxygenation and condensation catalysis in three substrate classes of interest in biomass refining.

Conversion of nitriles to amides uses aldoximes as the water source: Rhodium
Noteworthy Chemistry, 04 January 2010

http://portal.acs.org/portal/PublicWebSite/noteworthy/archive/CNBP_023778

S. Chang, H.-Y. Lee, and co-workers at the Korea Advanced Institute of Science and Technology (Daejeon) describe the selective hydrolysis of nitriles with aldoximes under anhydrous and neutral conditions. The conversion to amides uses an excess of the aldoxime and is mediated by a moderate amount of [RhCl(PPh3)3] catalyst.

Photocatalyst sees the light: Platinum
Highlights in Chemical Science, 11 January 2010

http://www.rsc.org/Publishing/ChemScience/Volume/2010/02/photocatalyst_sees.asp

A nanoparticle photocatalyst that works under natural light and could be used to remove pollutants from water has been developed by scientists in China and Japan.

The catalyst uses platinum nanoparticles loaded with the semiconductor bismuth oxide (Bi2O3). The Bi2O3 allows transfer of electrons to take place on excitation by visible light. This generates holes on the surface that decompose organic molecules such as acetaldehyde and formaldehyde.

Researchers develop catalyst-free metallic nanowire building technology: Palladium
YONHAP NEWS, 17 January 2010

http://english.yonhapnews.co.kr/techscience/2010/01/16/95/0601000000AEN20100116001500320F.html

The Korea Advanced Institute of Science and Technology (KAIST) in Daejeon, said a team led by Kim Bong-soo has successfully created a defect-free nanowire with superelastic properties.

The development, published in the latest on-line issue of "Nano Letters" journal, is noteworthy because until now, catalyst-free expitaxial growth has only been achieved with nanowires made with semiconducting materials, while metals such as gold and palladium required an agent to grow following a designated pattern.

New visible light photocatalyst kills bacteria, even after light turned off: Palladium
News Bureau | University of Illinois, 19 January 2010

http://www.news.illinois.edu/news/10/0119photocatalyst.html

In the battle against bacteria, researchers at the University of Illinois have developed a powerful new weapon – an enhanced photocatalytic disinfection process that uses visible light to destroy harmful bacteria and viruses, even in the dark.

Professor Jian Ku Shang's research group had previously developed a catalytic material that worked with visible light, instead of the ultraviolet light required by other catalysts. This advance, which was made by doping a titanium-oxide matrix with nitrogen, meant the disinfection process could be activated with sunlight or with standard indoor lighting.

To improve the efficiency of the catalyst, Shang and collaborators at the U. of I. and at the Chinese Academy of Sciences added palladium nanoparticles to the matrix.

Nano-scientists produce field sensors for large magnetic resistances: Platinum
Fars News Agency, 31 January 2010

http://english.farsnews.com/newstext.php?nn=8811110588

Iranian researchers managed to produce a new kind of nano-layers which are suitable for synthesis of magnetic field sensors to be used in large magnetic resistances.

The researchers could detect magnetic fields with magnitudes of less than 6 milliteslas (mT) by creating nanostructures of metals like platinum and copper on $Si/SiO_2/CuPt$ bases. Such a work is evaluated as a significant step forward in the production of magnetic field sensors with large magnetic resistances.

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