

Patent Granted For A Chemical Compound That Acts As A Molecular Switch

June 30 2004

The University Jaume I (UJI), together with researchers from the CSIC and the Universitat Politècnica de València, has patented a new compound whose physico-chemical characteristics open up a wide range of technological applications. The compound is one of the metallodendrimers, which are molecules that undergo reversible changes in their structure as a response to an external stimulus and which could, therefore, act as molecular switches.

The design and synthesis of hyperbranched macromolecules (dendrimers) that include metals in their structure has become increasingly more important in recent years. The desire to develop this type of materials stems from the need to obtain highly ordered compounds with magnetic, electronic and optical properties, which are of great technological interest. The molecule patented by the UJI covers this need, as these physico-chemical properties allow it to change its structure when it is submitted to an oxidation process or to a light stimulus and then regain its original form when the stimulus disappears. The compound therefore acts as a genuine molecular switch.

“This new family of molecules opens up a wide range of possibilities in the research and design of machines on a molecular scale, which would have important implications in scientific fields such as molecular detection systems or chemical sensors, the design of chemically controlled switches, electro-optical modulation and data storage,” the researchers explain.

The molecule can also be used to detect the presence of a certain light radiation that is invisible to the human eye at a particular wavelength, such as ultraviolet rays, in places where the slightest amount of radiation could be extremely harmful.

Scientists now need to find new systems that enable them to obtain a macroscopic view of the changes that have been observed on a molecular level. This type of applications would make it possible to design, for example, patches that bathers could use at the seaside to warn them when it is no longer wise to sunbathe. To develop this and other applications, the researchers are seeking partners with whom to exploit the patent.

Source: [UNIVERSITAT JAUME I](#)

Citation: Patent Granted For A Chemical Compound That Acts As A Molecular Switch (2004, June 30) retrieved 25 April 2024 from <https://phys.org/news/2004-06-patent-granted-chemical-compound-molecular.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.