

Synthesis and overview of the properties of phosphorus dendrimers

Phosphorus dendrimers are hyperbranched macromolecules built with one phosphorus atom at each branching point. The versatility of phosphorus chemistry enables the synthesis of highly sophisticated structures, and also the easy functionalization of the surface, to develop numerous properties. These properties include their use as efficient and recoverable organometallic or organic catalysts, and as building blocks for nanomaterials, such as nanotubes or hydrogels, and to modify the surface of materials, for instance of elaborating biochips. The proof of concept of the use of phosphorus dendrimers as biological tools has been obtained in several cases, for bioimaging, and above all for fighting against diverse chronic or acute inflammatory diseases, and against cancers or tuberculosis, as shown below.

