

PROCESS OF CONTROLLED RADICAL GRAFTING OF A POLYOLEFIN



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Invention



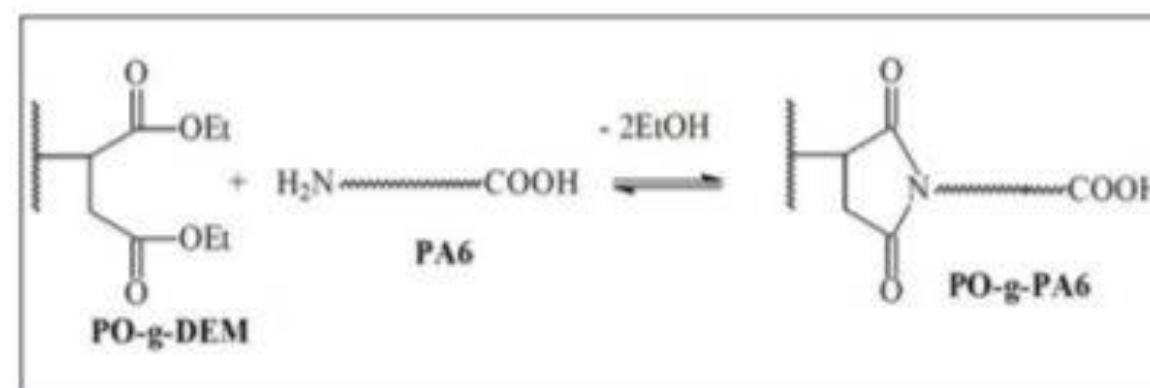
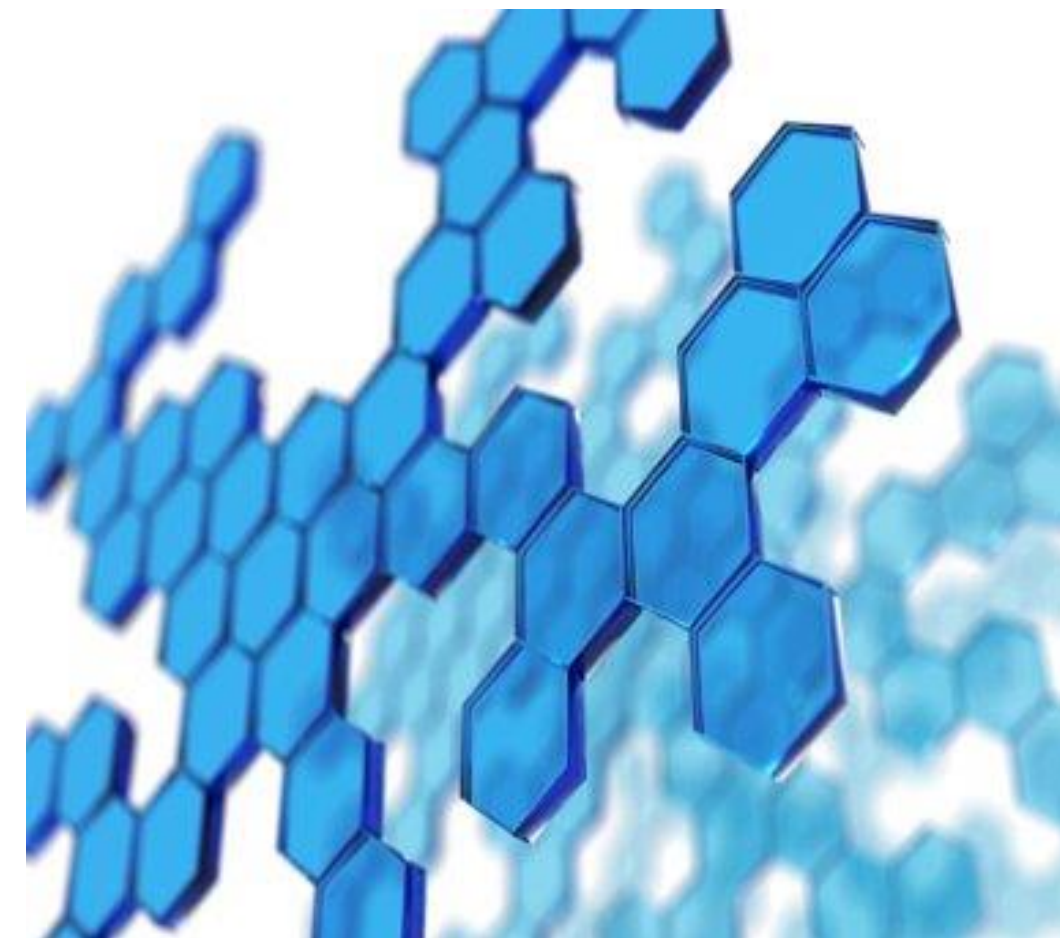
The invention relates to a process for controlled functionalization of a polyolefin in the presence of radical reaction initiators.

Radical grafting of polyolefins is a method widely used in industry for the production of modified materials, which are essential in many plastic formulations and used, for example, as chemical coupling agents, impact modifiers or compatibility enhancers for fillers. The grafting reaction allows the introduction of small amounts of polar groups, e.g., anhydride or acid ester (generally contained in small weight percentages) into the polymer chain in order to impart new properties to the polymer without significantly changing its initial characteristics.

The patented process comprises reacting the polyolefin and the at least one radical reaction initiator with a functionalizing system, comprising at least one functionalizing compound having an aromatic heterocyclic ring electron conductor conjugated to at least one $-HC=CR_1R_2$ group in which at least one of R_1 and R_2 is an electron reacting functional group. The Process may be conducted continuously in an extruder or discontinuously in a mechanical mixer.

Functionalization is accomplished using low-cost compounds that do not require complex synthesis processes, the process is therefore cost effective.

Drawings
& pictures



Schema 4 - Reazione del gruppo dietil succinato aggraffato alla catena poliolefinica con i gruppi terminali di una poliammide

Industrial applications



The patent addresses the plastics and rubber industry, with reference to the industry of mixing and manufacturing complex materials.

In particular, the sectors involved are those producing structural materials of various types such as:

- automotive;
- production of household appliances;
- production of polymeric materials applicable to the synthetic flooring and gaskets sector;
- production of building materials.

Possible developments



Radical functionalization has been conducted in numerous laboratory tests obtaining encouraging results, the process has also been validated in an industrial setting. The research team is interested in considering the transfer of the patented technology for exploitation by third parties.

For more information:



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