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Polymer Containing Functional End Groups Is Base for New Polymers

Butadiene has been polymerized with lithium-p-lithiophenoxide (lithium salt of p-hydroxyphenyl lithium) to produce a linear polymer containing an oxy-lithium group at one end and an active carbon-lithium group at the other end. This polybutadiene-based polymer

$$LiOC_6H_4(CH_2CH=CHCH_2)_nLi$$

is one of a class of macromolecules that have been designated "living polymers." Such polymers will remain stable even after long storage periods, and will still be capable of reacting with specific monomers to form more complex polymers.

These living polymers represent a new approach to the preparation of difunctional polymers in which structural features, molecular weight, type, and number of end groups can be controlled. For example, the polybutadiene-based living polymer has been reacted with silicon tetrachloride to form a four-armed star polymer centered on the silicon atom and terminated at each arm by a lithiophenoxide group. The living polymer has also been reacted with carbon dioxide to produce a polymer terminated at one end with a phenolic hydroxy group and at the other with a carboxyl group. The latter polymer molecule can be reacted at either end or at both ends to form star, block, and graft polymers. These new polymers have potential application in the development of binders, adhesives, elastomers, protective coatings, and structural materials where specific chemical and physical requirements must be met.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B71-10184

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to:

Patent Counsel
Mail Code 1
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103

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