

**TITLE OF INVENTION: PROCESS AND HYDROCARBON SOLUBLE SALINE
HYDRIDE CATALYST FOR HYDROGEN MEDIATED SALINE HYDRIDE
INITIATED ANIONIC CHAIN TRANSFER POLYMERIZATION AND POLYMER
DISTRIBUTION COMPOSITIONS PRODUCED THEREFROM**

ABSTRACT

This invention relates to processes for forming hydrogen mediated saline hydride initiated anionic polymer distributions via novel polymerization conditions in which molecular hydrogen is a chain transfer agent and a Lithium Aminoalkoxide Complexed Saline Hydride (LOXSH) forms an anionic polymer chain initiating species by addition of saline hydride to an anionically polymerizable hydrocarbon monomer.

This invention further relates to polystyrene compositions having greatly improved microstructures free of co-product polymer chain distributions.

This invention also relates to novel hydrocarbon soluble saline hydride catalyst and reagent compositions useful in conducting the hydrogen mediated saline hydride initiated polymerizations of this invention.

Hydrocarbon soluble lithium hydride catalysts and reagent compositions formed from dimethylaminoethanol, an alkyllithium reagent and molecular hydrogen.

Catalyst forming processes, the use of the catalyst in hydrogen mediated anionic polymerization (HMAPS) of styrene and the resulting low molecular weight polystyrene distributions of low asymmetry and high "head to tail" microstructure.

[Fig. 1]