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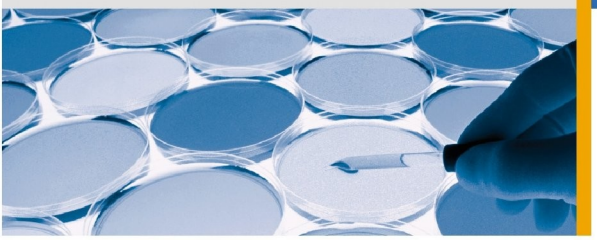


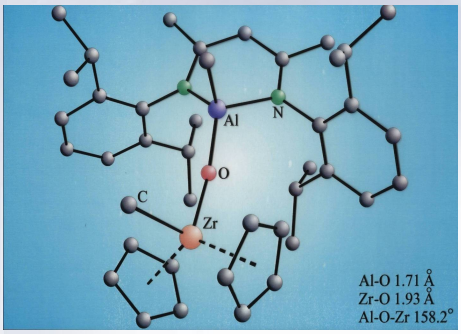
Licensing Opportunitiy (BioC-1058-SUG)

Oxygen-bridged bimetallic complex ideally suited for olefine polymerization

Advantages:

„two metalls are better than one“

- cheaper production
- better polymer quality
- higher stability



Polymer Properties:

- DSC measurements show melting points of the PE produced in the range of 122 to 139 ºC, which is in the typical range for LLDPE.
- GPC measurements show monomodal PE.
- 13C NMR data confirm approximately 3% branches (≤ C6 in length) along with the chain backbone for polymers.

In recent years there has been immense interest in preparing catalysts to produce linear low density polyethylene (LLDPE). LLDPE offers significant advantages compared to conventional polymers: high tensile strength, higher impact and puncture resistance, superior toughness, good organoleptics and low blocking, excellent clarity and gloss, and easy blends with other polyolefins. LLDPE can be obtained by using metallocene catalysts with a coactivator, like methylalum(in)oxane (MAO).

Former work of scientist at the University of Göttingen has already resulted in a new class of oxygen bridged heterobimetallic complexes containing Al–O–M moiety (M = Zr, Ti, Hf) which are highly active in olefin polymerization, see also WO 2005/090373. The binuclear compounds can exhibit higher catalytic activity and needs much lower amounts of expensive MAO than their mononuclear counterparts, which can only produce negligible branching.

Now, there are new developments in this type of bimetallic catalysts: they incorporate a small level of branching into the LLDPE leading to excellent processibility and high melt tensions suitable for film manufacture.

The complex exhibits good thermal stability and shows an increase in activity by almost two times of that at room temperature. Current work aims to completely abandon MAO and to substitute it with simple and cheap trialkylalumina.
Further developments are undertaken to copolymerize other monomers by the help of other metall centers: outlook towards biodegradeable polymers.

We are looking for licensing partners.

signo Hochschulen
Schutz von Ideen für die gewerbliche Nutzung

Ein Programm des Bundesministeriums für Wirtschaft und Technologie

Niedersachsen

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