

# Novel Guanidine-Quinoline Hybrid Ligands and the Application of their Zinc Complexes in Lactide Polymerisation

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*Dedicated to Professor Wolfgang Beck on the occasion of his 80<sup>th</sup> birthday*

The syntheses of the three new guanidine-quinoline hybrid ligands TMGMqu, DMEGMqu and TMG<sup>t</sup>bqu are reported. Zinc chlorido and triflate complexes with these ligands were obtained and structurally characterised by X-ray crystallography. In the chlorido complexes the zinc atom is coordinated by two chlorido ligands and the bidentate guanidine ligand in a distorted tetrahedron. Using zinc triflate, tetrahedral bis(chelate) complexes are formed, and the triflate anions serve only for charge compensation. All reported complexes show activity in the polymerisation of *rac*-lactide, with the chlorido complexes only showing a poor activity. With the bis(chelate) triflate complexes a high polymerisation activity with a slight heterotactic bias was observed. Kinetic studies reveal a first-order chain growth reaction for the lactide polymerisation with all complexes.

*Key words:* Guanidine Hybrid Ligands, Zinc Complexes, Lactide Polymerisation