# Lithium diaminebis(aryloxido) complexes : synthesis, structures and reactivity in L-lactide polymerization.

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Streszczenie

Lithium compounds of the tetradentate diaminebis(aryloxido) ligand $[Li_6(\mu\text{-}L\text{-}\kappa^4O,N,N,O)_2(\mu^3\text{-}X)_2(thf)_4]$ (**1**, X = Br; **2**, X = I) {L = $[Me_2NCH_2CH_2N(CH_2\text{-}4\text{-}Me\text{-}C_6H_3O)_2]^{2-}$} were synthesized in high yield using conventional deprotonation procedure as recently described for $[Li_6(\mu\text{-}L\text{-}\kappa^4O,N,N,O)_2(\mu^3\text{-}Cl)_2(thf)_4]$ (**3**). The ligand precursor $H_2L$ was reacted with MeLi and LiX (X = Br, I) in thf to give related hexametallic species **1** and **2**. Substitution of thf molecules in **1** by benzyl alcohol generates $[Li_6(\mu\text{-}L\text{-}\kappa^4O,N,N,O)_2(\mu\text{-}Br)_2(BnOH)_4]$ (**4**). A moisture causes partial hydrolization of **4** to form ionic species $[Li_4(\mu\text{-}L\text{-}\kappa^4O,N,N,O)(\mu\text{-}LH\text{-}\kappa^4O,N,N,O)(\mu\text{-}H_2O)_2(BnOH)_2]Br$ (**5**). Compounds **1**, **2**, **4** and **5** were characterized by chemical and physical techniques including X-ray crystallography for **1**·thf, **4** and **5**. The molecular structures of **1** and **4** contain the same $Li_6O_4X_2$ core but they differ in the coordination mode of bromides, $\mu_3$-Br in **1** and μ-Br in **4**. The cation of **5** adopts a ladder-like conformation, closed by the intramolecular hydrogen interactions. Preliminary experimental results show that **1**–**3** in the presence of benzyl alcohol efficiently initiate the ring-opening polymerization of l-lactide yielding isotactic polymers with relatively narrow polydispersity indexes.

Słowa kluczowe

Lithium complexes, Aminebis(aryloxido) ligands, Ring-opening polymerization, crystal structure, NMR spectra

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