Dimeric Methylzinc Bis(2-pyridylmethyl)amide –
Synthesis, Molecular Structure and Reaction with Dimethylzinc

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Dedicated to Professor Ingo-Peter Lorenz on the occasion of his 60th birthday

The zincation of bis(2-pyridylmethyl)amine with dimethylzinc yields dimeric methylzinc bis(2-pyridylmethyl)amide (1) with a central Zn$_2$N$_2$ cycle with Zn-N distances of 204.8(5) and 209.8(4) pm. The Zn-C bond length of 197.0(5) pm lies in the characteristic region. The addition of dimethylzinc to 1 leads to an opening of the Zn$_2$N$_2$ cycle and the formation of tetramethyl-trizinc bis[bis(2-pyridylmethyl)amide] (2). The dimethylzinc molecule coordinates to a pyridyl and an amide group, the C-Zn-C bond angle of 135.3(3) being rather large. In solution, compound 2 loses methane at room temperature and the intramolecular metalation product tris(methylzinc) bis(2-pyridylmethyl)amide 1,3-di(2-pyridyl)-2-azapropane-1,2-diide (3) precipitates. The newly formed Zn-C bond is extremely long at 219.7(5) pm.

Key words: Metalation, Pyridyl Substituents, Vicinal Dianion, Zinc