Investigations on the Thermal Decomposition of Coordination Polymers Based on Copper(I) Halides and 2-Methylpyrazine

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The thermal behaviour of the three coordination polymers $^{2}_{\infty}$poly[CuX(μ-2-methylpyrazine-N,N')] (X = Cl (**I**), Br (**II**)), and $^{2}_{\infty}$poly[{Cu_2I_2 (μ-pyrazine-N,N')$_2$} · 2-methylpyrazine] (**III**) was investigated using differential thermal analysis and thermogravimetry (DTA-TG) measurements as well as temperature resolved X-ray powder diffraction in argon and in air. On heating all compounds decompose in two steps. In the first step compound **I** and **II** loose one and compound **III** looses two of the 2-methylpyrazine ligands to form the corresponding 2:1 compounds Cu_2Cl_2(2-methylpyrazine) (**IV**) and $^{2}_{\infty}$poly[Cu_2X_2(μ-2-methylpyrazine-N,N')] (X = Br (**V**), I (**VI**)). From the experiments there is no evidence for the formation of a 1:1 compound of CuI and 2-methylpyrazine as an intermediate phase during the thermal decomposition. On further heating the 2:1 compounds **IV**, **V** and **VI** transform directly to the corresponding copper(I) halides.