

Thermal decomposition of barium valerate in argon - DTU Orbit (08/11/2017)

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The thermal decomposition of barium valerate ($\text{Ba}(\text{C}_4\text{H}_9\text{CO}_2)_2$ /Ba-pentanoate) was studied in argon by means of thermogravimetry, differential thermal analysis, IR-spectroscopy, X-ray diffraction and hot-stage optical microscopy. Melting takes place in two different steps, at 200 degrees C and 280 degrees C and evidence was found for the solidification of the melt at 380-440 degrees C, i.e. simultaneously with the onset of decomposition. Between 400 degrees C and 520 degrees C ($\text{Ba}(\text{C}_4\text{H}_9\text{CO}_2)_2$) decomposes in two main steps, first into BaCO_3 with release of $\text{C}_4\text{H}_9\text{COC}_4\text{H}_9$ (5-nonanone), whereas final conversion to BaO takes place with release of CO_2 . Elemental carbon that is left as a by-product is finally slowly burned by the residual oxygen present in the Ar atmosphere. (C) 2015 Elsevier B.V. All rights reserved.

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