Crystal structure and thermoanalytical study of a cadmium(II) complex with 1-allylimidazole.

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Streszczenie

The crystal structure of a cadmium(II) 1-allylimidazole complex ($[Cd(1\text{-}AIm)_3(NO_3)_2]$, where 1-Aim = 1-allylimidazole), was characterized by single-crystal X-ray diffraction analysis. Thermogravimetry (TG) coupled with an FTIR unit was used to study the thermal behaviour of the complex. A multi-step decomposition occurred in the complex due to the release of the ligand molecules, followed by oxidation. The final residue at 1073 K was found to be cadmium(II) oxide. The oxidative decomposition pattern of the examined complex initially proposed by the percentage mass loss data was proved by the evolved gas analysis. Finally, a kinetic analysis of the oxidative decomposition steps was made using the Kissinger equation, while the complex nature of the decomposition kinetics was revealed by the isoconversional Ozawa–Flynn–Wall method.

Słowa kluczowe

Cadmium(II) complexes, Imidazole derivatives, crystal structure, TG, DSC, Coupled TG-FTIR, EGA, Decomposition kinetics

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