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Investigating the effect of copper(II) coordination compound with Carbonylbis(azanediyl)dibenzoic acid ligand on the phase-stabilization of ammonium nitrate

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In this work, a novel copper(II) coordination compound is synthesized using Carbonylbis(azanediyl)dibenzoic acid (CAD) as ligand (Cu(II)-CAD). The structural, and morphological property of the synthesized material are investigated using FT-IR, CHN, FE-SEM, BET and PXRD analyses. Evaluation of the obtained results indicates that CAD coordinated to copper ions. Ammonium nitrate (AN) is an affordable oxidant, which is widely used in gas generators. Since AN shows crystal structure transformation in ambience temperature accompanied by a change in volume, its application is limited without phase stabilization [1-5]. For phase stabilization of AN, AN/Cu(II)-CAD composite is prepared and its phase transitions is studied using differential scanning calorimetry (DSC). The results indicate that ANIV↔ANIII phase transition can be eliminated by hydrogen bonding between AN and Cu(II)-CAD.

Keywords: Ammonium nitrate (AN), Carbonylbis(azanediyl)dibenzoic acid (CAD), Phase stabilization, Cu(II)-CAD, AN/Cu(II)-CAD

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