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Editor Note

Inorganic Chemistry

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Abstract

The Journal covers the various topics related to stereochemistry, biochemistry, organometallic chemistry, catalysis, supramolecular chemistry, materials science, organic synthesis, natural products, heterocyclic chemistry, industrial inorganic chemistry, NMR spectroscopy, electrochemistry, organometallic compounds, crystallography, molecular geometry, organometallic chemistry, descriptive chemistry, crystal lattices, coordination chemistry, heat of combustion, green chemistry, organic chemistry, physical organic chemistry, bioorganic chemistry.

Journal of inorganic chemistry volume 1 issue 1 publish articles discussing on melamine: a new versatile reagent for inorganic nanomaterials synthesis [1], isomerism in quantum dots: geometries, band gaps, dipole moments, ionization energies and heats of formation [2], m42 primer processing with potassium and copper salt formulations [3], polytypism of mos2 [4], and synthesis and characterization of 5-methyl-2,4,6-trinitrobenzene-1,3-diolate and its energetic cesium salt [5].

Melamine a chemical compound used for industrial purpose as for the production of laminates, glues, molding compounds, adhesives, flame retardants, and coatings. Melamine term is used for both chemical and plastic made from it. Yapryntsev et al. [1]., presented article discussing melamine as a novel versatile reagent for inorganic Nanomaterials synthesis. A versatile technique for nanocrystalline oxides and oxohydroxides synthesis is proposed based on microwave-assisted hydrothermal hydrolysis of melamine. This technique is represented by the synthesis of CeO2, ZnO, Eu2 (OH)5 NO3•xH2O. Differing in the temperature of the hydrothermal and melamine concentration, particle size, also the morphology of the solid products can be easily tuned. The proposed method provides an additional control over the microstructure of inorganic materials synthesized by a hydrothermal technique. Therefore, the method proposed will provide an additional control over the microstructure of inorganic materials.

Quantum dot (QD) is a common term to designate a semiconductor nanostructure that confines motion of its conduction band electrons and valence band holes in all directions. QDs are very small particles that their electronic and optical properties differ drastically from the bulk volume of the corresponding substance. Vitaly et al. [2]., discussed on Isomerism in quantum dots geometrics, band gaps, dipole moments, ionization energies, and heats of formation. As any relatively large molecule, QDs exist in the form of many isomers, whose properties vary in the wide range. Stabilities of these isomers are determined by their thermodynamics and conditions of storage. The global minimum search techniques are proven to be a valuable tool for identifying isomers and comparing their physicochemical

properties.

There has been a significant effort to develop suitable replacements for many energetic formulations containing environmentally undesirable compounds, especially lead. The purpose of this work by Puszynski et al. [3]., is to synthesize and characterize tetraazido (1,2-di (1Htetrazol-1-yl) ethane) dicopper (II) (Cu-salt) and dipotassium di-nitraminobistetrazole (K-salt) with the intent to replace lead styphnate in the M42 primer, while maintaining other compounds in the formulation. The formulations were prepared using a manual dry mixing procedure. The prepared mixtures were manually hand-loaded and consolidated using a hydraulic press. The anvils were inserted and the primers were tested for proper performance function (primer sensitivity and pressure output). The developed process is used to manufacture a small set of primers which were tested for primer sensitivity and pressure output characteristics. The sensitivity and pressure output data are then compared to commercial M42 primers currently used in grenade applications. The primers manufactured with formulation containing the lead syphnate replacement compounds demonstrated very good agreement with the required specifications such as primer sensitivity and pressure output.

Molybdenum disulfide is an inorganic compound composed of molybdenum and sulfur. Its chemical formula is MoS2. The compound is classified as a transition metal dichalcogenide. It is a silvery black solid that occurs as the mineral molybdenite, the principal ore for molybdenum. MoS2 is relatively unreactive. Riccarda Caputo. [4]., investigate the polytypism of MoS2 via first-principles crystal structure prediction approach. In particular, authors combined the random searching method, AIRSS, for crystal structure prediction, and total energy calculations, based on density functional theory, by using CASTEP. The first exhibits a band gap of 1.007 eV and the second a metallic band structure. In addition, other, but unstable, structures are predicted indicating that the main factor driving the polytypism in MoS2 is the relative stacking and orientation of the slabs on which the sulfur atoms are positioned. The complex equilibrium that governs the attraction-repulsion interactions between those sulfur slabs makes reason of the variety of the polytypic structures and consequent mechanical and electronic properties of MoS2.

Andreas Drechsel et al. [5]., described the synthesis and characterization of the primary explosive cesium 5-methyl-2,4,6-trinitrobenzene-1,3-diolate (3) as well as its precursor compounds. The compounds were isolated as pure substances and characterized using multinuclear (1H, 13C) NMR spectroscopy, vibrational (IR and Raman) spectroscopy, mass spectrometry and elemental analysis. The thermal behavior of the compounds is established using differential scanning calorimetry. The solid-state structure of 5-methyl-2,4,6-trinitrobenzene-1,3-diol (2) is determined using low temperature single crystal X-ray diffraction. The friction and impact sensitivity tests were carried out using the BAM friction tester and BAM drop hammer respectively. The sensitivities of the compounds towards electrostatic discharge (ESD) were determined using a small-scale ESD device (OZM). The gas phase absolute molar enthalpy at 298.15 K and 1 atm for 2 is computed applying the CBS-4M method using the GAUSSIAN 09 program package. Gas phase standard molar enthalpy of formation (ΔHf °(g)) for 2 at 298 K is computed using the atomization energy method. Standard molar enthalpy of formation (ΔHf °(g)) for 2 is calculated using ΔHf °(s) and the standard molar enthalpy of sublimation by applying Trouton's rule. The detonation parameters for the covalent compounds which were investigated and calculated using EXPLO5 V6.03 thermochemical computer code, using the calculated ΔHf °(s) values and the densities which were either obtained from X-ray diffraction at 298.15 K or were recalculated from values obtained at 173 K.

For more information https://jacobspublishers.com/jacobs-journal-of-inorganic-chemistry/#1529677334525-c814ad0d-fb7e

Further, the Journal welcomes articles from all the fields related to Inorganic Chemistry.

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