Defense Technical Information Center

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Title : Novel Approaches to the Synthesis of Fluorodinitromethane and Fluorodinitroethanol.

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Corporate Author : FLUOROCHEM INC AZUSA CA

Personal Author(s) : Archibald, T. G. ; Nguyen, N. ; Khosrowshahi, J. S. ; Baum, K.

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Abstract : Fluorodinitroethanol (FDNE) is a basic building block for energetic plasticizers and binders. Without compromising thermal stability, FDNE provides greater energy content than dinitropropanol, which has been used in large quantities for manufacture of plasticizers. However, the current production cost limits use of FDNE to special applications, and there is a need for a new, low cost production method. Readily available, inexpensive FDNE and derivative compounds could be used to improve the performance of rocket propellants and explosives. Fluorodinitroethanol (FDNE) has been produced without the use of elemental fluorine. Nitration of 1,2-dichlorodifluoroethylene gave chlorofluoronitroacetic acid, which was converted to chlorofluoronitrosomethane with red fuming nitric acid and water. Oxidation of the nitroso compound gave chlorofluorodinitromethane, which was reduced to FDNE with iodide in the presence of formaldehyde. (aw)

Descriptors : *BINDERS, *FLUORINATED HYDROCARBONS, *PLASTICIZERS, *SYNTHESIS (CHEMISTRY), *NITROMETHANE, *ETHANOLS, ENERGETIC PROPERTIES, EXPLOSIVES, FORMALDEHYDE, NITRIC ACID, NITRO RADICALS, NITROSO COMPOUNDS, OXIDATION, PROPANOLS, RED(COLOR), ROCKET PROPELLANTS, THERMAL STABILITY, WATER, NITRATION, REDUCTION(CHEMISTRY).

Subject Categories : INDUSTRIAL CHEMISTRY AND CHEMICAL PROCESSING
ORGANIC CHEMISTRY
ROCKET PROPELLANTS

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