



**18-20 March, 2020**

# **National Conference on Chemistry**

## **CHEMISTRY FOR GROWTH AND SUSTAINABILITY**

### **ABSTRACTS BOOK**

Chemistry Department

Islamia College University Peshawar

Pakistan





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## Process Optimization for Synthesis of Ni-based Compounds as Initiator, Primer/Detonator

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### Abstract

This work aims to investigate synthesis of Nickel based energetic materials as a replacement for lead based compounds. Commercially employed mixtures of lead azide, and lead styphnate are toxic, and very sensitive to friction, impact and heat. Nickel hydrazine nitrate (NHN) can be utilized as a safer choice for developing energetic materials due to its low mechanical sensitivity, good stability, and insensitivity towards light. Nickel based mixture was synthesized in lab-scale and compared to conventional mixtures in terms of efficacy as energetic material, safety during synthesis as well as in storage and handling. NHN is synthesized on batch method by hydrazine (80%) and nickel nitrate in the presence of Ethanol (80-90%). A comparatively study of LA, LS & NHN have been carried out and it is observed that NHN is more powerful than first two. It is concluded from results that NHN can replace LA & LS in primaries/Detonators where flash is involved. Promising results were obtained that may require validation before commercial application.

**Keywords:** Safety, Energetic Materials, Lead Azide, Lead Styphnate, Detonators

### Bibliography