Classification of explosive materials using X-ray Synchrotron Radiation Techniques

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For the past decades, Thailand has suffered from the major threats of the improvised explosive devices. Without effective knowledge of the commonly used explosive materials in such region, further investigations toward the explosive incidents have become much more difficult. This work has been performed as a part of building up information of one of the most commonly used explosive materials, i.e., emulsion explosive, which mainly contains N, C and O. Because the identifications of the traced elements play an important role to separate their origin of productions[1], this study therefore employed the synchrotron-based techniques, i.e., XRF and XANES, in order to identify such elements. The results proved that a set of Ti, Ni, and Cr detections are necessarily needed to completely categorize 4 types of emulsion explosives out of 6. In addition, this work elucidates the forms of chlorine which has previously been reported[2].

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