

A Novel Method to Form Carbon Nanocomposites

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Abstract: Carbon-coated nanocomposites have been synthesized by a self-heating detonation process using nitro-amine CHNO explosives of 1,3,5-trinitro-1,3,5-triazacyclo-hexane (RDX) providing the need of high temperatures, high shock waves, and parts of carbon sources in the presence of catalyst. The products of carbon nanomaterials are characterized by XRD, EDX and TEM techniques. In this work, various carbon nanostructures or metal nanocomposites can be efficiently obtained from the detonation of the desired molecular precursors. In summary, catalytic detonation of carbon-rich explosives can be designed as a simple method and with the potential application for the rapid production of nano-structured materials of graphitic carbon-encapsulated nanoparticles and carbon-nanotubes.

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FIGURES

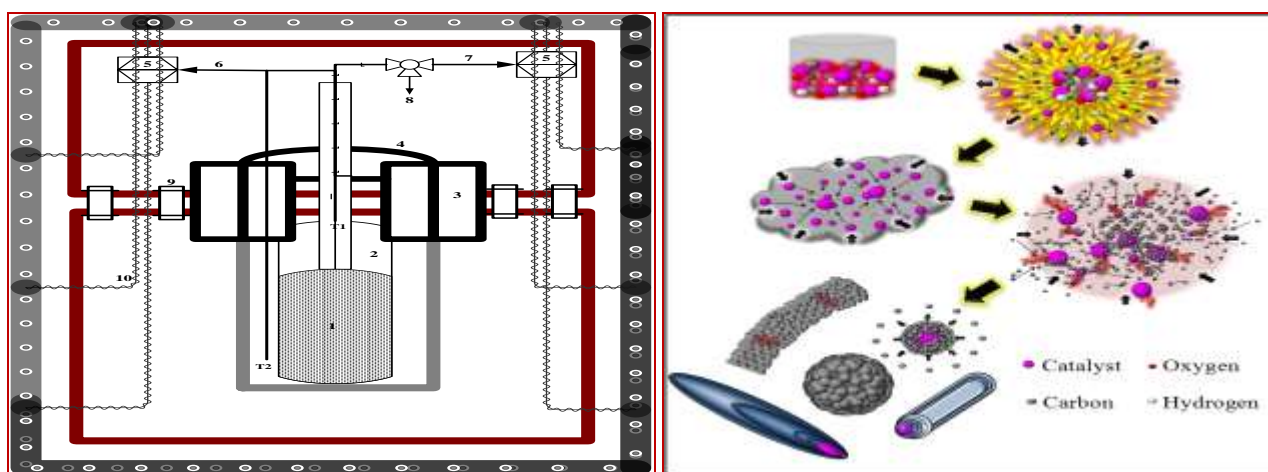


Figure 1: Schematic diagram (left) and reaction routes (right) of a novel reaction system for the detonation of CHNS energetic materials over different metal-catalysts for the assembly of various nanostructures.