

SAFE MANUFACTURING OF ENERGETIC COMPOSITES BASED ON NANODISPERSE COMPONENTS

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Abstract – A safe technology has been developed for manufacturing pyrophoric ultra- and nanodispersed metal powders, which are applied as modifiers for energetic composites in special-purpose systems. The method is based on electric-arc plasma recondensation of metal powders according to a continuous process scheme. Safety is ensured by a closed circuit technological cycle, which eliminates contacting pyrophoric and highly toxic nanopowders with the external environment. The kinetic parameters of spontaneous combustion of metallic combustible binders have been studied, which made it possible to give recommendations on safe handling of reactive nanocomponents.

Keywords: energetic composites, nanomaterials, nanotechnology, pyrophoricity, metal powders, safe manufacturing.