

Exothermic Property in Thermite Reaction by Controlling the Regularity of Inverse Opal Aluminum Frame

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Nanothermite materials are a energetic compound which is composed of fuel (Al) and oxidizer (CuO, Fe₂O₃, Cr₂O₃, MoO₃, etc.). In nano-thermite area, a key parameter to enhance reactivity of thermite material is the intimate interfacial contacts between fuel and oxidizer. Various approaches have been developed to combine fuel and oxidizer together including sputtering deposition, arrested milling methods, and electrospray methods. However, because of a high reactivity of aluminum particles, the regular array of fuel and oxidizer in nanothermite material is challenging projects. In this study, the thermite materials assembled using inverse opal aluminum frame as a fuel metal. Thus, the regularity of the inverse opal thermite materials enhance the reactivity of combustion reaction.