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CHARCTERISATION MICROSTRUCTURALAND MECHANICALOF Ni/NiAl2O, DEVELOPED BYMECHANICAL ALLOYING AND REACTIVE4SINTERING.

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Abstract : This study concerns the development of Nickelmatrix composite; this composite was obtained after high-energyball milling for long time of milling. The initial powders mixedare the Nickel oxide and Aluminum, the reduction of Nickel oxideby Aluminum called Aluminothermic reaction. The high energymilling active the aluminothermic reaction and occurred theNickel-based composite, after milling we obtained powdercomposite with low density, which it necessary to following thisprocess by reactive sintering. The milling and the sintering wasperformed under argon atmosphere. The reactive sintering athigh temperature allows composite with high density. Aftersintering at 800 °C we obtained Ni/NiAl2O4. The powders milled and the samples sintering were characterized by X-raydiffraction, scanning electron microscopy, and the grain size ofpowders milled measured by laser analyzer granulometry. TheNickel aluminate (NiAl2O4) obtained has been applied innumerous fields to its high thermal stability and specific catalyticproprieties.

Keywords : Ni/NiAl 2 O4, reactive sintering, reactive milling, powder metallurgy, Aluminothermic reaction.