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Study Ni₇₀Al₂₀Si₁₀ prepared by mechanical alloying

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Abstract : Alloys based on nickel, aluminum and silicon have been extensively studied because they are of great interest for high temperature structural applications (low density, high specific strength, greater resistance to oxidation, high temperature resistance). The properties of these materials can be improved by mechanical alloying. In this work we have developed and studied intermetallic Ni₇₀Al₂₀Si₁₀ prepared by mechanical alloying. The powder mixtures were crushed in a planetary ball mills for synthesis. The balance, the milling time was a factor in the study of structural changes of this compound to 50 hours of milling. Characterizations by SEM and XRD are used to derive the properties of this compound.

Keywords : intermetallic alloy, Mechanical Alloying, Aluminum- Nickel-Silicon, SEM, XRD