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# SYNTHESIS AND CHARACTERIZATION OF HIGH-ENERGY BALL MILLED NANOSTRUCTURED Co<sub>50</sub>Ni<sub>50</sub>

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**Abstract :** Mechanical alloying method was used to prepare nanocrystalline Co<sub>50</sub>Ni<sub>50</sub> alloy. X-ray diffraction was applied to determinate the structure of the alloy. Structural and microstructural parameters (lattice parameters, microstrains, crystallite sizes and phase percentages) were deduced from the Rietveld refinement of XRD patterns, by using the MAUD program, and discussed as a function of milling time. XRD results indicated that the crystalline solid solutions were achieved after 6h of milling. SEM observations revealed that mechanical alloys consist of agglomerated fineparticles of about 24 nm in size

**Keywords :** Nanomaterials; Mechanical alloying; Ni-Co alloys; Differential scanning calorimetry; X-ray diffraction