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Synthesis of NiCr-70Cr₃C₂ nano-composites by high energy ball milling and their morphological characterization

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Nanostructured NiCr-70Cr₃C₂ powders were synthesized by high energy ball milling in a planetary ball mill. Two ball-to-powder ratios, four milling times and two milling speeds were used. The material was characterized by X-ray diffraction (crystalline phases and crystallite size), particle size analysis (average grain diameter), and scanning electron microscopy (powder morphology). With the increasing BPR, milling time and speed the crystallite size and mean diameter decreases. The result shows that using a ball-to-powder weight ratio of 1:20, a milling time of 1 h and a milling speed of 500 rpm, the average particle size and crystallite size were, respectively, 5.6 μm and 8.3 nm.

Biography

Panta P C is Postdoctoral student in the Department of Materials Engineering at the Federal University of Rio Grande do Sul, Brazil.

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