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Investigation of AL/B4C nanocomposite powders: Experimental and numerical analysis

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In this paper, densification behavior of nanocomposite powders of Al/15 vol% B4C was investigated during the single action compaction. The Drucker/Prager Cap model was applied to determine compaction behavior and density distribution of Al/B4C composite and nanocomposite powders. Experimental data and parameters in the model were obtained from compression tests with various loading conditions. Finite element results from the models were compared with experimental data for densification behavior of mixture of powders. Results of the density distribution obtained with the model show a good agreement with the experimental data. The experimental data and model show that density distribution of Al/15%volB4C nanocomposite powders is more uniform compared to the composite ones.