# INVESTIGATION OF DIFFERENT CARBON NANOTUBE REINFORCEMENTS FOR FABRICATING BULK AlMg5 MATRIX NANOCOMPOSITES

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AlMg5-based metal matrix composites were successfully fabricated using high energy planetary ball-milling and hot pressing. The influence of 6 types of carbon nanotubes (CNTs) with different properties was investigated for reinforcement. Over 3 fold increase in hardness and ultimate tensile strength was achieved with maximum values of 200 $HV_{20}$ and 720 MPa respectively by varying CNT content from 0.5 to 5 vol%. The state, the dispersion as well as the reactivity of the different CNTs were investigated by Raman spectroscopy, X-Ray diffraction and microscopy. The CNTs were considered to be dispersed homogeneously, but were shortened due to high energy milling. No significant differences in mechanical performances could be observed depending either on the nature or on the agglomeration initial state of the investigated CNTs. The milling time has to be however adjusted to the CNT content as higher concentrations require a longer milling time for achieving dispersion of the nano-reinforcement.

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