

The fabrication of MWNT-reinforced alumina using spray pyrolysis and spark plasma sintering

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Multi-walled nanotube(MWNT) implanted alumina was synthesized by spray pyrolysis and spark plasma sintering process. For the preparation of MWNT-amorphous alumina composite powder using spray pyrolysis, aluminum nitrate nonahydrate was used as the source of Al and Pluronic P123 as dispersion agent of MWNT in water base. The optimum condition of spray pyrolysis was at 800°C in N₂ atmosphere. The powder was consolidated by spark plasma sintering after heat treatment. The structure of final composite was investigated with SEM, TEM and XRD analysis and the hardness and fracture toughness were measured using Vicker's indentation test.