COLD SPRAY COATINGS OF Al–Fe–Cr ALLOY REINFORCED BY NANO-SIZED QUASICRYSTALLINE PARTICLES

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S u m m a r y

By using powders of high-temperature strength aluminum alloys such as $Al_{94}Fe_3Cr_3$ and $Al_{94}Fe_{2.5}Cr_{2.5}Ti_1$ which were fabricated by the water-atomized technique, the efficient application of the cold-spray process for the consolidation of metal particles by severe plastic deformation with retaining the quasicrystalline particles of nano- and submicroscaled sizes (<100 to 200 nm) in the deformation-induced structure is justified. A model for the plastic deformation of powder metallic particles under cold-spraying conditions is developed. The effect of plastic deformation characteristics on the structure and mechanical properties of coatings and a substrate is studied.