

In the Abstract:

ENHANCED FORMULATION OF COBALT ALLOY MATRIX COMPOSITIONS

A method for manufacturing a single-element matrix cobalt-based granular media alloy composition formulated as $\text{Co}_{f_1} - (\text{M}_u\text{O}_v)_{f_2}$, M representing a base metal selected from the group consisting of magnesium (Mg), titanium (Ti), vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), nickel (Ni), copper (Cu), zinc (Zn), aluminum (Al), silicon (Si), yttrium (Y), zirconium (Zr), niobium (Nb), molybdenum (Mo), ruthenium (Ru), indium (In), lanthanum (La), hafnium (Hf), tantalum (Ta), and tungsten (W), u and v representing the number of atoms of base metal M and oxygen (O) per oxide formula, respectively, and f_1 and f_2 being mole fractions represented by the equation $f_1 + (u + v)f_2 = 1$. The method includes the steps of blending a Co- M master alloy powder and a Co_uO_v powder into a corresponding $(\text{Co}_a\text{M}_{1-a})_{f_1} - (\text{Co}_u\text{O}_v)_{f_2}$ formula, and densifying the blended powders.