Title (en)

METHOD FOR REINFORCING AN ALLOY BY PLASMA-NITRIDING

Title (de)

HERSTELLUNGSVERFAHREN EINER DURCH PLASMA-NITRIERUNG AUSSCHEIDUNGSGEHÄRTETEN LEGIERUNG

Title (fr)

PROCEDE DE FABRICATION D'UN ALLIAGE RENFORCE PAR NITRURATION PLASMA

Publication

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Application

EP 11815535 A 20111222

Priority

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Abstract (en)

[origin: WO2012085489A1] Process for manufacturing a reinforced alloy comprising a metallic matrix, dispersed in the volume of which are nanoparticles, at least 80% of which have a mean size from 1 nm to 50 nm, the nanoparticles comprising at least one nitride chosen from the nitrides of at least one metallic element M belonging to the group consisting of Ti, Zr, Hf and Ta. The process comprises the following successive steps: a) plasma nitriding of a base alloy is carried out at a temperature from 200°C to 700°C in order to insert interstitial nitrogen therein, the base alloy incorporating 0.1% to 1% by weight of the metallic element M and being chosen from an austenitic, ferritic, ferritic- martensitic or nickel-based alloy; b) the interstitial nitrogen is diffused within the base alloy at a temperature of 350°C to 650°C; and c) the nitride is precipitated at a temperature from 600°C to 900°C over a duration of 10 minutes to 10 hours, in order to form the nanoparticles dispersed in the reinforced alloy.

IPC 8 full level

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CPC (source: EP KR US)

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