

Title (en)

Near-zero magnetostrictive glassy metal alloys with high magnetic and thermal stability.

Title (de)

Metallegierungen mit Glasstruktur, einer Magnetostraktion in der Nähe von Null und hoher thermischer und magnetischer Stabilität.

Title (fr)

Alliages métalliques ayant une structure de verre, une magnétostriction de presque zéro et une grande stabilité magnétique et thermique.

Publication

EP 0084138 A2 19830727 (EN)

Application

EP 82111754 A 19821217

Priority

US 34041382 A 19820118

Abstract (en)

A new series of glassy metal alloys with near zero magnetostriction is disclosed. The glassy alloys have the composition $\text{Co}_a\text{Fe}_b\text{Ni}_c\text{Mo}_d\text{Be}_e\text{Si}_f$, where a ranges from about 58 to 70 atom percent, b ranges from about 2 to 7.5 atom percent, c ranges from about 0 to 8 atom percent, d ranges from about 1 to 2 atom percent, e ranges from about 11 to 15 atom percent and f ranges from about 9 to 14 atom percent with the proviso that the sum of a, b, c ranges from about 72 to 76 atom percent and the sum of e and f ranges from about 23 to 26 atom percent. The magnetostriction of these alloys ranges from about -1×10^{-6} to $+1 \times 10^{-6}$ and the saturation induction is between about 0.6 and 0.8 Tesla. The transition metal content is responsible for the low magnetostriction in these alloys. The metalloid content strongly affects the saturation induction, Curie temperature, and magnetic stability. Magnetostriction is mildly affected by the metalloid composition and a particular range of Si/B ratio for certain iron, cobalt containing alloys wherein the magnetostriction is near-zero and relatively insensitive to the Si/B ratio. The same Si/B ratios also provide high magnetic stability.

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Cited by

US4938267A; US6118365A; EP0303324A1; EP0544646A3; EP0550403A3; EP0302747A3; EP0240600A1; US9925653B2; WO8803699A1; WO9812847A1

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